Railway Age Gazette

FIRST HALF OF 1916—No. 23

SIXTY-FIRST YEAR

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NEW YORK—JUNE 9, 1916—CHICAGO

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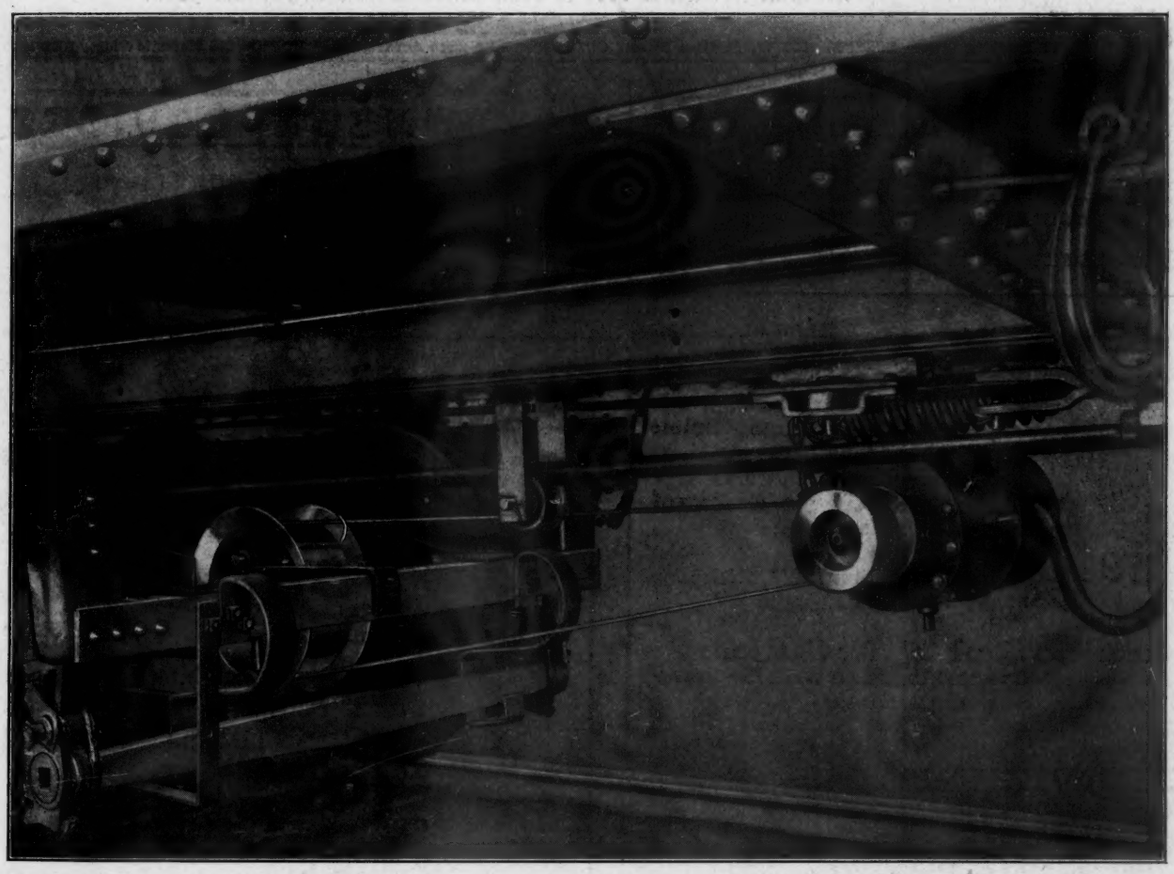

Note the clearance between the generator and the track, and the clearance between the brake-rigging and the belt.

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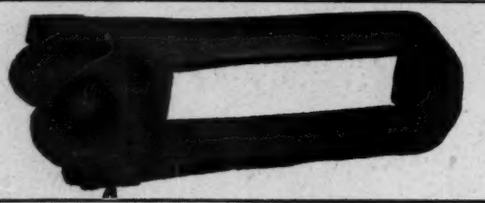

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Railway Age Gazette

Volume 60. June 9, 1916. No. 23.

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The agitation for legislation to limit the length of freight trains finally has been carried into Congress. Representative Murray of Oklahoma has introduced a measure prohibiting the operation of trains more than one-half mile long in interstate commerce or in the District of Columbia. Of course, it is inspired by the railroad labor lobby. The leaders of the train service employees are in conference in New York with a national committee of managers representing the railways regarding demands of these employees for enormous increases in wages. At the same time their lobbyists are busily engaged in trying to secure legislation to destroy the very methods of operation which alone made it possible for the railways to pay the existing high wages without either great advances in freight and passenger rates or universal bankruptcy. The inconsistency of asking simultaneously for shorter trains to run and more pay for running them is, it would seem, rather obvious to all except those who don't want to see it. It is an attempt to get higher wages because the efficiency of railway operation has increased and at the same time to reduce the efficiency of railway operation. The service brotherhoods are trying to ride two horses that are running in opposite directions. Never in their history were they so rashly and stupidly led; and it is only a matter of time, and of a comparatively short time, until this will be the undoing either of their present leaders or of the brotherhoods themselves.

A Train Limit Bill in Congress

In case of war it is altogether probable that the railway shops will be called upon to manufacture supplies and munitions, and it will be the problem of those in charge to organize the forces and rearrange the equipment and facilities to meet these demands. Locomotive and car repair facilities on many roads are inadequate for present purposes and in a number of cases repair work is being done under contract by locomotive or car building companies. Under war conditions it will be absolutely essential that all equipment be maintained in first-class condition. To do this, and also to take on additional assignments for manufacturing munitions and supplies, will require considerable additions to the plant and equipment. It is the duty of the officers now in charge to study and decide upon just what will need to be done in extending the organization and making it effective, and how the additional facilities can be provided in the shortest possible time. The general policy of the manufacturers of munitions in this country has been to keep their arrangements and processes as secret as possible and to bar out all visitors. In the interests of the nation at large it would seem that a broader policy might be followed so that those who will be called upon in times of emergency to do similar work will have an opportunity of studying what is now being done and of using this knowledge in planning for the future. The Westinghouse companies at Pittsburgh, and particularly the Westinghouse Air Brake Company at Wilmerding, are to be commended for throwing their shell manufacturing plants open to the railroaders on Monday last and giving them every opportunity to study the details of handling this work from start to finish. It is safe to say that every one of the 150 or more railroad officers who spent the day at their works went back home with a bigger conception of his responsibilities in case our country should have to call for the co-operation of the railroads in manufacturing munitions. Doubtless every one of them will give much thought and study to just how he may best handle the facilities under his disposal should they be required for this purpose.

Preparedness for Railway Shops

The figures for earnings and expenses of the railroads for April are beginning to be made public and almost without exception they make a fine showing. The New York Central's operating income is more than 35 per cent greater than in 1915, and the net available for dividends after all fixed charges is $2,903,000, an increase over the corresponding figure for 1915 of $945,000. The Pennsylvania's operating income is nearly 40 per cent. greater than in April, 1915, and net available for dividends is $4,094,000, an increase of $1,169,000. The Baltimore & Ohio is an exception to the general rule as regards net. Operating revenues in April, 1916, were $9,042,000, an increase of $1,612,000 over April of the previous year; but all of this increased revenue was more than offset by an increase of $852,000 in maintenance of way expenses and of $863,000 in maintenance of equipment expenditures. For the ten months the Baltimore & Ohio is still away ahead of the previous year in net. The company

April Railroad Earnings

has net operating income of $26,289,000, or $4,715,000 more than in 1915. The fact of the matter is that in the three months March, April and May of 1915 a good many people had doubts as to the ability of the Baltimore & Ohio to earn its dividend. Maintenance of equipment and maintenance of way expenses were cut to the lowest level compatible with safety. Business being below normal, it was comparatively easy to keep cars and locomotives from going into the shop, and since a failure of the Baltimore & Ohio in the 1915 fiscal year to earn its dividends might seriously have impaired the company's credit, no chances were taken. In the previous year the company had failed to earn its dividend, and for the three years previous to 1916 both the engineering forces and forces in the mechanical department were rigidly held down. With a safe margin above dividends, the Baltimore & Ohio is now making up this slack and, especially so far as the maintenance of way is concerned, is making the expenditures early in the season, when they will be most effective. The purpose of these comments is rather to point out this exception to the general rule made by the Baltimore & Ohio and to call attention to the fact that if, as more reports come along, there are other exceptions, specific causes should be looked for. The good showing of the Southern Railway ought not to be passed without mention. April gross in 1916 was $6,181,000, an increase of $969,000, or about 19 per cent. By far the greater part of this was saved for net, operating income being $2,038,000 in 1916, an increase of $738,000, or 57 per cent, over April, 1915. For the ten months operating income for the Southern Railway was $17,316,000, an increase of $6,393,000, or nearly 5 per cent, over the ten months of 1915.

FREIGHT CAR SAFETY APPLIANCES

UNDER date of May 10, the Special Committee on Relations of Railway Operation to Legislation issued Bulletin No. 80, calling attention to the fact that on July 1, 1917, the time within which freight cars built prior to July 1, 1911, must be brought into conformity with the United States Safety Appliance Standards will expire. The bulletin shows the rate at which cars coming under this head have been equipped since the law went into effect. It appears that of the 1,905,929 cars which were built prior to July 1, 1911, and are now in service, there remains 681,571 cars which have not yet been equipped with the safety appliance standards. The bulletin further states that an additional extension of time cannot be hoped for in which to apply them. This means that these 681,571 cars, or approximately 36 per cent of the cars affected, must be so equipped within the next year. The largest number of cars thus far equipped during any one year is 372,935. It therefore appears that drastic measures must be taken to bring these cars in conformity with the safety appliance laws.

It has been suggested by the above committee that the Master Car Builders' Association take action on this important matter at its convention which is to be held in Atlantic City this month. This would be a most logical course for that association to follow. It would undoubtedly be far more desirable for a road to apply the safety appliances to its own cars than to have this work done on foreign roads, and in order to do this it is necessary to route the unequipped cars homeward immediately. The M. C. B. Association has the power to prohibit the interchange of cars from their home lines not properly equipped with the safety appliances and it has been suggested further by the Special Committee that a rule be formulated to this effect, to become operative at a date sufficiently far in advance of July 1, 1917, to preclude the possibility of cars not properly equipped being in service on foreign lines at that time. If such a rule is presented to the association it should receive the hearty indorsement of all its members for without some such effective action serious trouble will ensue when this law becomes effective next year.

PREVENTION OF ACCIDENTS AT HIGHWAY CROSSINGS

THE report of the American Railway Association Committee on the Prevention of Accidents at Highway Crossings, submitted at the last meeting and noticed in another column, is a rather unusual document. It presents a body of well considered conclusions, on a large subject, which had been in committee only since the last preceding meeting of the association. And the association, as well as the committee has acted without delay; the report was at once adopted. The reasons for this prompt action are quite clear. First, the subject is a pressing one; every railroad officer has experience with the increasing crossing dangers introduced by careless automobile drivers. Second, the chairman of the committee, J. A. McCrea, general manager of the Long Island Railroad, had studied the whole subject with care, and tested his ideas on his own very busy road, where grade crossings are as thick as weeds, and, no doubt, had the principal conclusions ready formulated.

The committee seems to have adopted the majority of the Long Island's ideas bodily; and in this it does itself credit. Uniformity in practice throughout the United States is a prime requisite in this matter and it will be of the utmost advantage if the Long Island's ideas and practice, so far as recommended by the committee, can be spread rapidly in all parts of the country. And, in saying this, it is not necessary to assume that the Long Island has said the last word in the matter. Modifications may hereafter be found necessary and further progress is to be anticipated; but the problem is pressing and no time should be lost. Roads which have not studied the subject have now a pretty well defined plan mapped out which they can proceed to adopt. On three of the five recommendations there should be progress without much delay. Roads which have made some progress will best serve their own interests and those of the people along their lines by henceforth following closely the lines of the committee's recommendations. Automobilists now roam hundreds of miles from home, and uniformity of signs and practices is not merely an attractive theory; it is quite sure, if made extensive enough, to save lives and property.

This committee should have and doubtless will have the hearty co-operation of all the railroads. A matter affecting the relations of railroads to the state and the municipality in every town in the United States cannot possibly be dealt with except by co-operative action. The railroads cannot do all that is required. In one very important matter, that of signs on the highways to be set up several hundred feet back from the railway, they have no authority whatever, and their function is to do what they can to educate public sentiment in regard to this need. There are three other parties: (1) the National Association of Railway Commissioners, (2) the state commissions individually (where their association does not act, or where a commission dissents from the association's action) and (3) the legislatures. The McCrea committee must keep its eye on the legislatures, for very often these bodies in their deliberations—or, rather, in their haste—act with scant regard for the detailed views of either the railroads or the railroad commissioners. The National Association of Railway Commissioners, as will be seen by the report, already has a grade crossing committee, and the American Railway Association committee is actively co-operating with it.

It is to be hoped that every railway officer will see that this young and vigorous propaganda for uniformity is brought to the attention of everybody in his own state who ought to be interested—commissioners, magistrates, legislators and governors. The members of the railroads' committee are located in New York, Connecticut, Ohio, Illinois, California and the District of Columbia, and they can have influence in other states, through the officers of their own respective companies. They will have extensive influence.

But with 48 states to deal with their number seems small, and to really stir the state and local authorities every railroad manager should make himself a volunteer assistant to Mr. McCrea and his fellows. As the committee says at the close of its report, a proposition which is presented by the united railways of the country and the united railway boards of 46 states, ought to be invincible.

This report deserves a very careful reading. While tentative in form it presents in fact a pretty well digested scheme for constructive action. As the readers of the *Railway Age Gazette* already know, the Long Island Railroad Company and the State of New Hampshire have put in practice enough of the improvements which are recommended so that, together, they present a tested and practicable scheme which merits the attention of every railroad which is not satisfied with its present arrangements. And, in view of the admitted need of nation-wide uniformity, this scheme appeals to all roads, the satisfied and the dissatisfied.

"THE OLD ORDER CHANGETH"

"THE old order changeth, yielding place to new." This is especially true as to the railway business. A striking illustration is afforded by the agreement of the National Conference Committee of Managers and the committees representing the train service brotherhoods to admit newspaper men to their negotiations, which are in progress in New York. The suggestion that this be done came from the managers' committee. The spokesmen of the railways, in all their discussions of the present wage movement of the train service employees, have contended that the public is the principal party concerned, as the public will have to pay most of any increases in expenses which may result. The invitation to representatives of the press to attend was not meant merely as a courtesy to the press. The representatives of the press in a case of this kind are representatives of the public. The public being thus represented, it will be able, in effect, to participate in the conferences. It will know all that is said and done. It will be able to form an opinion on the merits of the issues involved, and its opinion will exercise a very potent, and perhaps decisive influence on the outcome.

This action of the railways and the labor brotherhoods in inviting the public, through the press, to attend and participate in the conferences is unprecedented. Both sides, and especially the railways, have heretofore been secretive and mysterious as to what has occurred at the meetings between representatives of the companies and of the men. When the railways in their discussions of the present wage movement recognized the fact that the public was the party chiefly concerned, the natural next step was to invite the public to come in and hear all that was said. The employees, by joining in the invitation, have tacitly recognized that the interests and rights of the public are deeply affected by the controversy.

It is not conceivable that the present conferences can result in any agreement between the committee of managers and the committees representing the employees. It is unnecessary to dwell on the way the public would be affected by a strike which would tie up all the railway facilities of the United States. Everybody understands that. The rights and welfare of the public demand above all other things that there shall not be a strike. Since an amicable agreement is out of the question the only alternative to a strike is arbitration, and the railways and the employees having recognized the rights and interests of the public by inviting it to attend the conferences, the logical next step, in case the conferences come to naught, would be arbitration. Will the employees, after having recognized the rights and interests of the public by joining in the invitation to it to attend the conferences, later trample on those same interests and rights, refuse to arbitrate and precipitate the enormous loss and suffering that a strike would cause? It goes without saying that the railways will be willing to arbitrate, provided their demands as well as those of the employees will be considered. To recognize the rights and interests of the public by opening the conferences to it, and to then ignore and trample on them by tying up the entire transportation system of the country would be a singularly inconsistent, as well as outrageous, performance.

The last important arbitration of a railway wage dispute was that which a year ago settled the controversy between the western railways and their engineers and firemen. The arbitration board was organized under the Newlands Act, and was composed of two representatives of the railways, two representatives of the employees, and two representatives of the public, the latter being Judge J. C. Pritchard and Charles Nagel, formerly secretary of commerce and labor. The result was not satisfactory to the employees and led to severe criticisms by their spokesmen regarding the course taken by Mr. Nagel. These criticisms from the losing side have not, however, been sufficient to impair Mr. Nagel's reputation as a very public-spirited, able and fair man, and an address made by him a few days ago before the St. Louis Railway Club on "The Public Carrier and the Wage Earner," most of which is published elsewhere in this issue, is of especial interest at the present time. Mr. Nagel, as a result of his experience in the arbitration mentioned, and of study and meditation on the general subject, has arrived at conclusions as unfavorable to the present method of arbitrating railway labor disputes as those at which the leaders of the railway brotherhoods apparently have arrived. He states the reasons for his conclusions in language at once picturesque, forcible and convincing, and it is to be hoped that his address will receive a wide reading.

The principal objection to the present scheme of arbitration is that it does not provide for a board composed of impartial experts to pass on the questions involved in a controversy; that an award in one dispute is not a precedent for an award in another; that there is nothing to prevent either party from refusing to arbitrate; and that while wage disputes when submitted to arbitration are settled by special boards improvised for each occasion, the settlement of cases involving freight and passenger rates is submitted to an entirely different body. In addition, as Mr. Nagel points out, when a dispute is submitted to arbitration all the employees of the railways are directly or indirectly concerned, while only those making demands are represented at the hearings.

Mr. Nagel has arrived at the same conclusion as to the remedy for the situation which has been reached by most other disinterested students of the subject. This is, that as the rates out of which railway wages must be paid have been subjected to public regulation and control, wages must be subjected to the same kind of regulation and control, and be determined by the same body or bodies that regulate rates. If the public, through the Interstate Commerce Commission, is going to continue to deal with freight and passenger rates as it does now, then the public should delegate to the Interstate Commerce Commission the duty of settling the present controversy and other similar controversies which may arise.

The regulation of wages presents no more difficulties than the regulation of rates. If advances in rates are to continue to be suspended pending investigation of their reasonableness, then advances in wages must be suspended pending investigation of their reasonableness. The public is presented with the alternative of either abandoning the present system of regulating rates or of adopting a similar system of regulating wages. Large classes of railway employees have no more right to combine and coerce the railways to pay unreasonable wages which would be a burden upon the public than large groups of railways have to combine and coerce travelers or shippers into paying unreasonable rates which would be a burden upon the public. The public having been invited into the conferences between the railways and the train service employees, it should insist on being allowed to continue to have a hand in the matter until there has been adopted a system for settling this and similar disputes which will prevent strikes and produce results fair and salutary for all concerned.

Letters to the Editor

FROM A TRAINER OF CLERKS

PORTLAND, Oregon.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have read with interest the article on page 469, March 17, on "The Ambitious Railroad Clerk"; and while I agree that a great majority of ordinary clerks do not attain a high position it seems to me that the railroad field offers as many opportunities as the larger percentage of commercial enterprises; and railroad work is just as attractive to young men as other lines of business.

On entering the service of a railroad one becomes a part of a large force of employees working in various occupations. It should be the aim to keep in that frame of mind which enables one to work hand in hand with brother men. To become a leader, a man must not fail to co-operate with and hold the esteem of his fellow workers.

The ordinary clerk can aspire to any position he may desire; and if he means to gain the top of the ladder he will let nothing interfere with the onward and upward movement. As he becomes proficient in his line he will surely command attention, and that is the way to achieve success.

Any clerk that has the inclination, ambition, and is willing to apply himself; who is not afraid of work nor eager to stop when the clock strikes will succeed in spite of life's uneven road.

Your Pittsburgh correspondent has had 18 years' experience. Counting my 20 years against this, I feel competent to take issue with the discouraging views he has expressed. I have grown with one corporation, been on the job continuously and am now training 85 accountant clerks for a higher class; and I don't allow them to become discouraged. Each one has something in front to work to. It is true there is a limit; but long before the goal is reached some find other employment, or keep on with a goodwill and a cheerful mood which is bound to bring success.

My plan, when a vacancy occurs somewhere in the line, is to roll the wheel; shove every man along one notch and close the gap. Have every one in the force understand that he will not only be permitted to advance but will be required to do so; and that when he can't keep up with the procession he will either be placed in a rest position or be asked to seek employment elsewhere, at something for which he is better fitted.

Every man in the organization, understanding his next move, will be looking forward to that position and be busy observing and learning about it. Knowing who will follow him he will train that man as his understudy, which means that the work goes on constantly without any interruption. Hence when the change is made the way has already been prepared, eliminating the necessity of teaching a green man the new work. Weak spots are uncovered and the lazy man and the incompetents are disposed of. There is little confusion when such changes are made. Every one receives an advance, all are happy, everyone has his interest aroused in his new position by the knowledge that he is learning. He is progressing and is not in a "blind alley," with no training and no outlook. He is in the line of march and going somewhere.

It is only cranks or the unfit who speak of being left in the rear, and the quicker this kind of men join other forces the better it will be for themselves and their employer.

I reiterate that there is just as much chance for recognition of ability and merit in a railroad field as there would be in any commercial organization. If clerks would apply themselves to the means at hand, their advancement would be more rapid. I know good clerks, who are as loyal to the company as any one can be, but who are not loyal to themselves; they do not seek every avenue by which to broaden themselves and do not grasp every opportunity to acquire greater knowledge about their particular work. If every railroad clerk would closely study the field in which he is employed, and reach out for a larger one, he would soon be recognized as the one for a higher position.

AN OLD CLERK.

WHAT IS THE MOST ECONOMICAL FREIGHT CAR?

CHICAGO.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I noticed in the *Railway Age Gazette* of May 5, an announcement that the Chicago & North Western had ordered 1,000 34-ft. wooden box cars. This again brings up the subject of the economy of steel vs. wood cars, as well as the subject of capacity. Some of the best and oldest superintendents of motive power and master car builders express themselves as in doubt on this subject. It is possible that a well-built wooden car with properly constructed long draft timbers extending through and between the upper and lower cover plates of the body bolster, 18 in. back of the body transom, with proper sub-sills and of proper capacity for the purpose for which they are used, is the most economical car after all. Except for very heavy commodities, like iron ore, coal and mineral products, they seem to have arrived at this conclusion by a system of records showing the percentage of time spent in the repair shops by their different series of cars.

To build a car of 80,000 lb. capacity when the lading for which it is intended will not exceed 60,000 lb., with the expectation that it may be used for heavier loads, is a great mistake from an economical standpoint, as the chances are nine out of ten that the loading will be less than 60,000 lb. This will be seen from the table below, which one of the large eastern trunk lines prepared by checking over 50,000 cars to ascertain the average weight of the contents. It will be noticed that about the only commodity averaging over 60,000 lb. per car is mineral products, Nos. 1 to 7, and on account of loading and unloading necessities these cars are in a class by themselves.

Commodity	Weight of contents in tons	Commodity	Weight of contents in tons
1. Iron and other ores	49.3	15. Petroleum and other oils	14.7
2. Pig and bloom iron	48.0	16. Other packing house products	15.0
3. Bar and sheet metals	48.0	17. Castings and machinery	14.8
4. Coke	35.7	18. Dairy products	8.9
5. Anthracite coal	40.3	19. Sugar	18.4
6. Iron and sheet rails	47.0	20. Fruit and vegetables	15.5
7. Bituminous coal	43.0	21. Dressed meats	11.3
8. Stone and sand	29.5	22. Corn	27.6
9. Cement, brick and lime	29.2	23. Merchandise	5.8
10. Lumber	23.2	24. Oats	24.0
11. Salt	24.5	25. Hay	11.5
12. Wines, liquors and beers	15.9	26. Other grain	26.8
13. Wheat	35.8	27. All other articles	15.5
14. Other manufactured articles	16.8	28. Flour	20.5
		29. Live stock	8.6

It is interesting to note that the great commodity "merchandise" only averaged from five to eight tons per car, and to build cars of 80,000 lb. capacity to carry only five or six tons seems absurd. The best average loading of commodities I have seen reported from railroads in the middle west is 28 tons per car.

A. C. M.

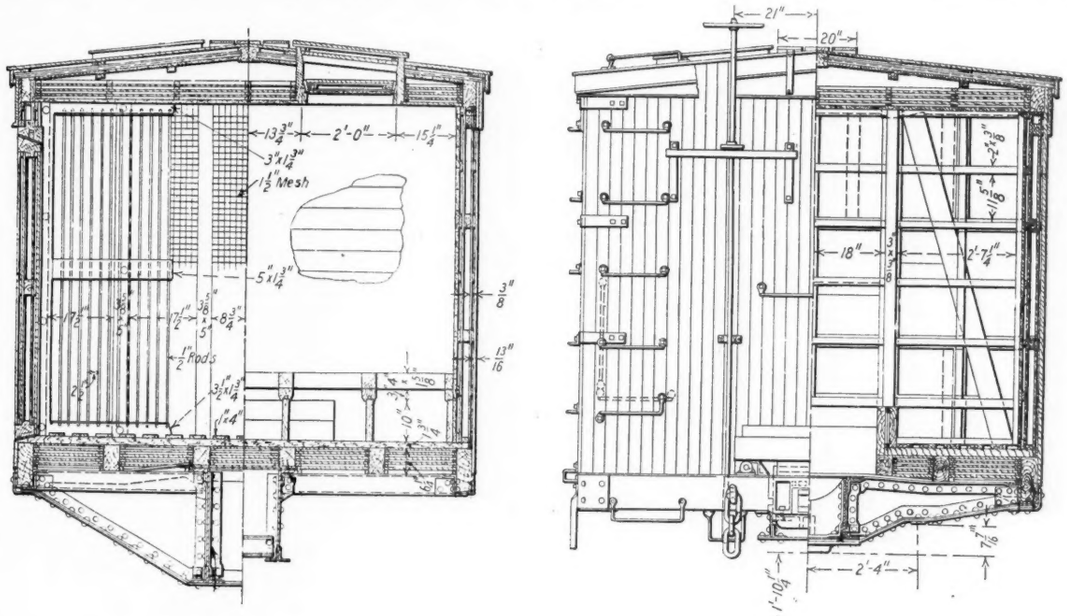
EGYPTIAN STATE RAILWAYS TO USE GERMAN LOCOMOTIVES.—The Egyptian State Railways have just taken delivery of four freight engines of German manufacture, which were destined originally for the Bagdad Railway. These were brought into Alexandria on a captured German vessel at the beginning of the war, and were some months ago condemned by the local prize court.

Northern Pacific Express Refrigerator Cars

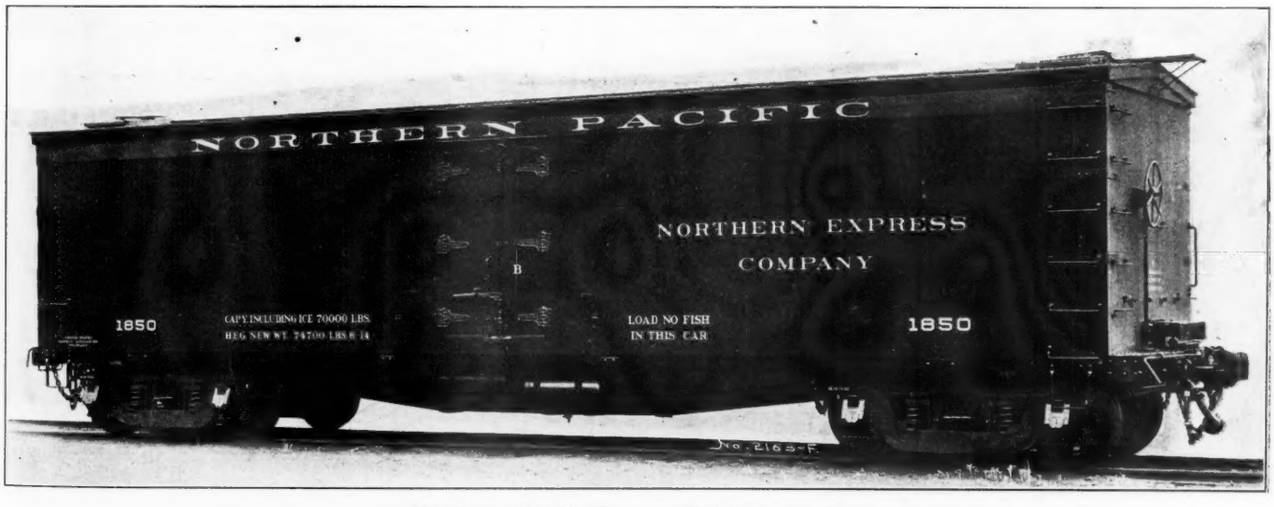
Specially Constructed for Use in Transportation of Perishable Goods in Passenger and Freight Service

THE Northern Pacific is called upon to transport large quantities of berries, cherries and other fruit from the states of Washington, Idaho and Oregon, to many distant inland cities, the cherries being shipped as far east as New York, Boston and Philadelphia. A considerable amount of fresh fish obtained from the fisheries in the Northern Pacific and Alaskan waters is also transported to inland and eastern points. In order to insure prompt and expeditious delivery at such distant points special passenger refrigerator cars are required. Forty of these cars, which have given very satisfactory service as refrigerators and as cars were built for this road by the Pressed Steel Car Company from the designs and specifications of the railway company. The cars were designed to be used in both passenger and freight service and have some interesting features of construction.

When used in passenger service they are placed at the head end of the train, which made it advisable that the strength of the underframe be equivalent to the United States railway mail service requirements for steel postal cars. It was also necessary to apply a spring buffing arrangement, which, when the cars are used in freight service, can be easily and quickly taken out of service. These cars have a light weight of 74,700 lb. and have a capacity of 70,000 lb., including 10,000 lb. of ice. The following are their principal dimensions:

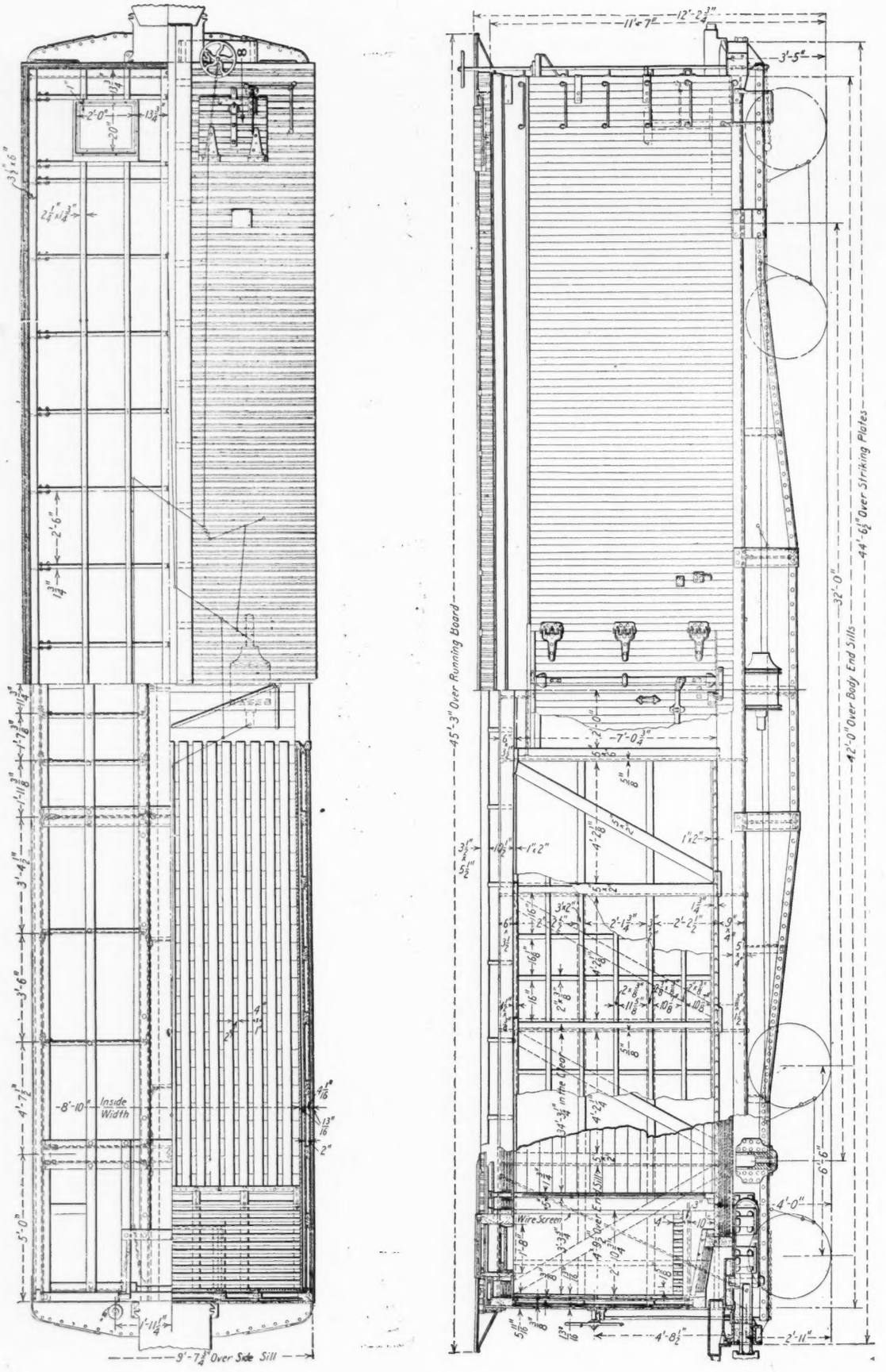


Cross Sections of the Northern Pacific Express Refrigerator Car



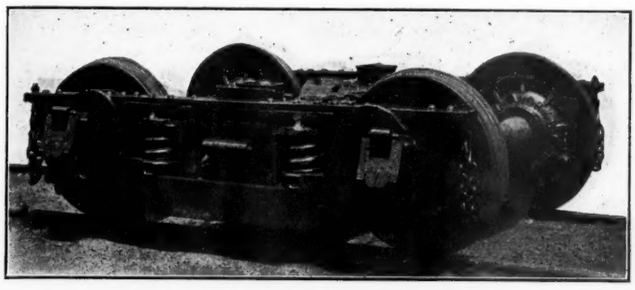
Northern Pacific Express Refrigerator Car

Length over sub-end sills	42 ft.
Length inside	41 ft. 2⅛ in.
Length inside, between ice boxes	34 ft. 3⅛ in.
Width inside	8 ft. 10 in.
Distance between floor and ceiling	6 ft. 11 in.
Bolster centers	32 ft.
Top of rail to top of running board	12 ft. 2¾ in.
Width over sheathing	9 ft. 9⅜ in.



General Arrangement of the Northern Pacific Express Refrigerator Car

The cars are designed to pass safely over curves of 150 ft. radius, and are built to conform to the New York City electric zone clearances and the American Railway Association's clearance for third rails. They are designed to carry

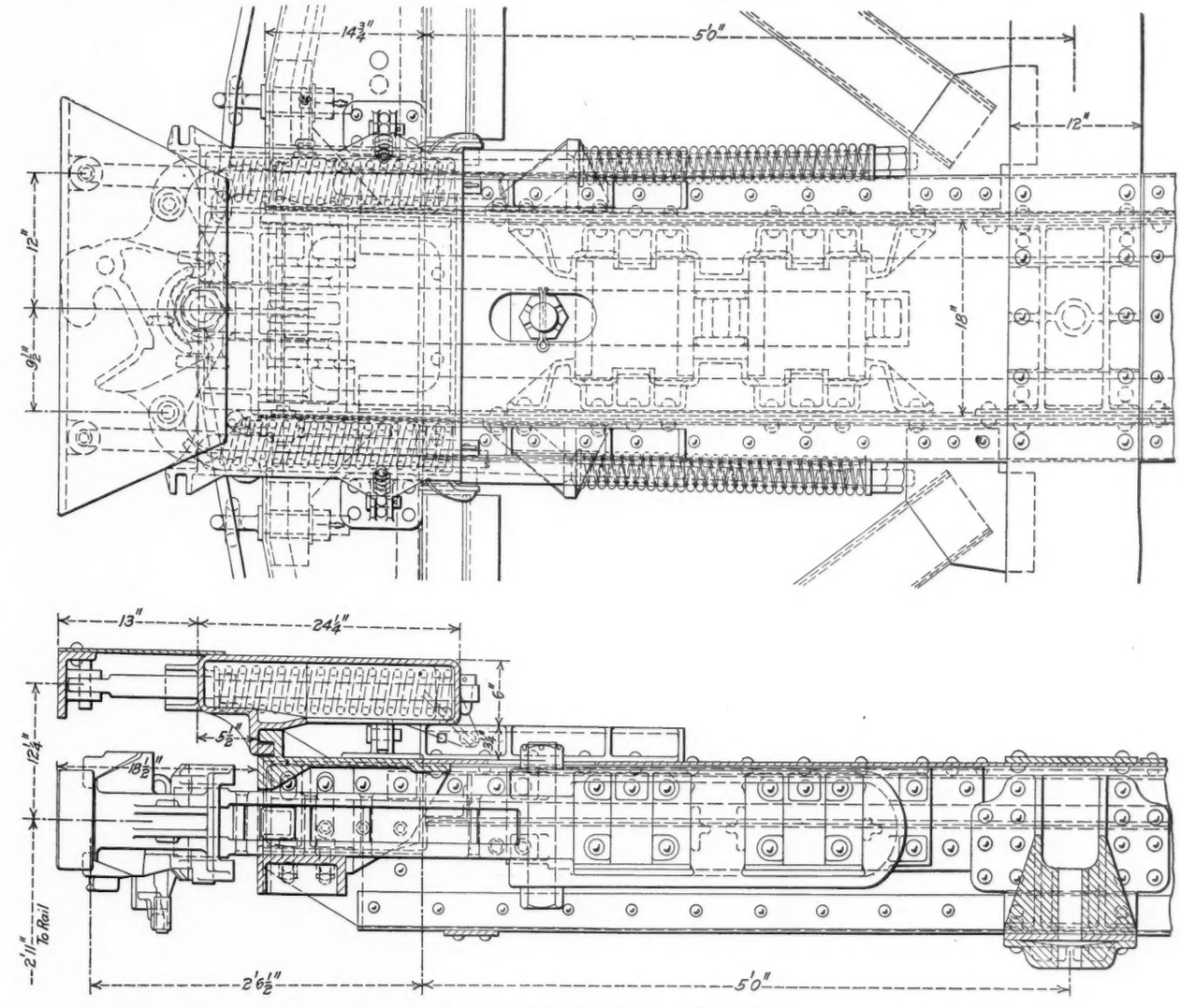


Four-Wheel Truck for the Northern Pacific Express Cars

a live load of 70,000 lb. plus 10 per cent overload in addition to the dead weight plus the usual 50 per cent allowance for shocks and oscillations. The steel underframe is similar to that used on the 60-ft. steel postal cars in use on that road and is designed to withstand a buffing shock of 400,000 lb. applied as a static load.

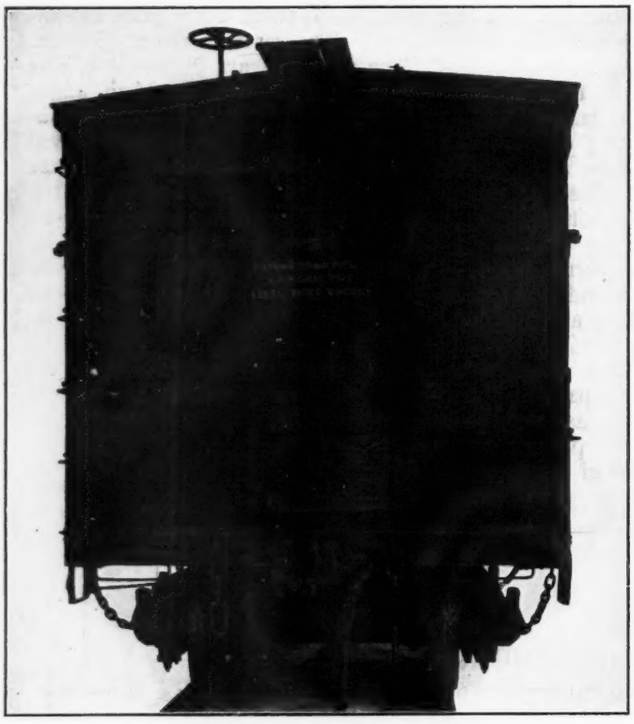
The center sills are of the fishbelly type, 28 in. deep at the center. They are composed of 5/16 in. vertical web plates located 18 in. back to back with 3½-in. by 3½-in. by 7/16-in. angles at the bottom (inside and outside), 3½-in. by 3½-in. by 7/16-in. angles at the top on the outside, one 26-in. by ¼-in. cover plate extending from end sill to end sill, and one 26-in. by 7/16-in. cover plate extending from bolster to bolster. The center sills are 15½ in. deep at the bolsters. The side sills are composed of one 5-in., 11.6-lb. Z-bar and one 5-in. by 4-in. by ⅜-in. angle. The bolsters and crossbearers are of the built-up type consisting of web plates reinforced by angles at the top and bottom and by cover plates. The platform end sills are composed of channel sections with cover plates at the top and bottom. The car body is of wooden construction consisting of 5-in. by 6-in. oak door posts, 5-in. by 5¾-in. oak corner posts, 2-in. by 5-in. fir side posts, 2-in. by 5-in. oak end posts, and 2-in. by 5-in. fir side and end braces. There are two 2-in. by 3-in. belt rails, and eighteen 1¾-in. by 10½-in. carlines.

The arrangement of the buffing device is shown in the accompanying drawings. The buffing springs are encased in a cast steel housing which is held in either the "in" or "out" position by toggle bolts fitting in the lugs at the corners of the housing. When in the "out" position the thrust on the buffer is transferred to the draft gear housing by means of interlocking lugs cast on both the buffer and draft gear housings, as shown directly underneath the front of the buffer housing. When in the "in" position the buffer hous-



Application of the Buffer and Draft Gear

ing rests on a bed plate and is well inside of the car in a recess built under the ice grates, as shown in the sectional elevation. A sliding door is provided on the end of the



End View, Showing Buffer Arrangement

car to cover the recess when the buffer is in the "in" position. The time consumed for changing the buffer from one position to the other, either for freight or passenger service, is from 10 to 15 minutes.

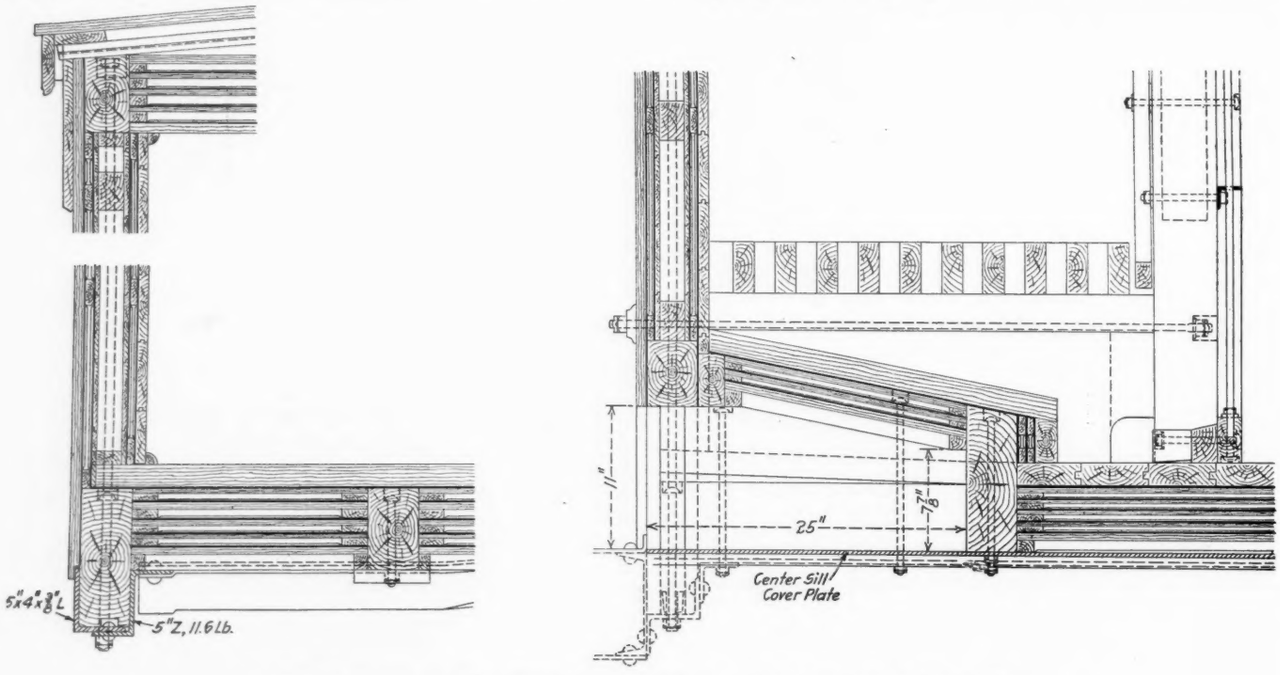
description of the insulation construction (from the inside of the car in the order shown).

INSULATION

Floor	Walls	Roof
1¾-in. flooring	13/16-in. lining	13/16-in. ceiling
90-lb. Neponset paper	90-lb. Neponset paper	90-lb. Neponset paper
1½-lb. wool felt	1½-lb. wool felt	1½-lb. wool felt
⅜-in. ship lap	⅜-in. air space*	Air space
½-in. air space	1½-lb. wool felt	⅜-in. ship lap
90-lb. Neponset paper	90-lb. Neponset paper	90-lb. Neponset paper
1½-lb. wool felt	⅜-in. ship lap	1½-lb. wool felt
⅜-in. ship lap	2-in. air space	Air space
½-in. air space	⅜-in. ship lap	⅜-in. ship lap
1½-lb. wool felt	90-lb. Neponset paper	1½-lb. wool felt
90-lb. Neponset paper	1½-lb. wool felt	90-lb. Neponset paper
¾-in. ship lap	⅜-in. air space*	Air space
½-in. air space	1½-lb. wool felt	⅜-in. ship lap
1½-lb. wool felt	90-lb. Neponset paper	1½-lb. wool felt
90-lb. Neponset paper	13/16-in. sheathing	90-lb. Neponset paper
⅜-in. ship lap		Air space
½-in. air space		⅜-in. sub roof
1½-lb. wool felt		90-lb. Neponset paper
90-lb. Neponset paper		Paroid plastic roofing
⅝-in. dead floor		Sub-carlines, 9/16 in.
		Sub-purlins, ⅞ in.
		13/16-in, roofing

*In the ⅜-in. air spaces in the walls vertical and horizontal flat wooden strips ⅜-in. thick are provided to cut up this air space into small sections, thus making these air spaces as near "dead" as they can be made by the careful fitting of wood to wood. In addition, these strips serve to hold the wool felt in place.

There is an ice box at each end of the car having an ice capacity of 5,000 lb. The Bohn syphon type fixed bulkhead is used. In addition to the usual ice pan drainage, drainage is also provided for the floor. The Miner tandem spring draft gear is used with one M. C. B. class G and one 8 in. by 8 in. Harvey friction draft spring in each gear. The cars are provided with the Westinghouse schedule LN-1412 air brakes. Cast steel parts, instead of forgings are used wherever practicable. The railway company's standard four wheel equalized trucks are used, having a wheel base of 6 ft. 6 in. and 5½ in. by 10-in. M. C. B. journals. The bolsters are steel castings and the spring planks are made up of two 6-in. by 4-in. by ⅜-in. angle bars. The bolster springs are triple elliptic and the equalizer springs are coil springs of the M. C. B. standard class



Sections Through Side, Roof, End and Floor, Showing Recess for Buffer

Sectional air space insulation for the walls, floor and roof is similar to that of the freight refrigerator cars built for this road in 1913. The accompanying table gives a detailed

G. The wheels are 34¼ in. in diameter with 3⅛-in. steel tires. The brake beams are of the Davis high speed solid truss type.

The Public Carrier and the Wage Earner

In Any Future Arbitration the Whole Situation, Including Interests Not Represented, Should be Considered

By Hon. Charles Nagel.*

Formerly Secretary of the Department of Commerce and Labor

I SELECTED advisedly "The Public Carrier and the Wage Earner," although I imagine a good many of you would have thought that I ought to be glad to avoid the subject. I do not feel quite that way about it, because I have no apologies to offer with respect to my position in the matter of the arbitration at Chicago. I am always willing to be shown that I have made a mistake in judgment, and I always resent a challenge to my integrity.

First of all, I found that the demands of the men, and the responses of the railroads were submitted to us as though we constituted an independent court, to try a case presented by two parties in litigation. It is true, we had what we call two "neutral" arbitrators—but we had before us two parties, and to my mind, the great public, which the neutrals were in some measure to represent, had no part or opportunity to be heard in behalf of its interests before that tribunal.

The demand was for standardization of wages and conditions. It was obvious that any rates that were granted upon any road which was prosperous would have to be met by other roads less prosperous; and in the nature of things, we were restrained, in our consideration of the wage standard—a uniform wage, east and west—by the circumstance that a very considerable number of western roads, at least, were in immediate difficulties. There were other things that weighed with me, and I propose to dwell upon them, at least, in considering the future.

We had before us demands upon the part of engineers and firemen. The demands were so shaped that only a part of the engineers and firemen could be considered; that is, the difficulty was that the men best situated had their demands in, while the men less advantageously situated were left without relief from us. Thus, the men who suffer from uncertain employment, dependent upon the prosperity of the road, the amount of business, being employed say two days, and then a day or two off, had no opportunity. They had no demand before us to present the question whether there ought to be some kind of guaranteed compensation for them, as long as they are held under orders.

The fact is that there is a very substantial difference in the character and compensation of various runs. Some are relatively easy, others hard; some commanding good wages, others much less so. Frequently, relatively light work and good compensation are combined in the same run. Under the seniority rule, the older men having the choice of places, therefore enjoy a distinct advantage. It may indeed be argued that in one sense the better conditions which the older men enjoy are intended to compensate for the less favorable conditions under which they work during the earlier stages of their employment. It cannot be overlooked, however, that these improved conditions are fairly remote, and that, owing to the uncertainties of fate and fortune, they may never be reached by a particular employee. It did not seem to me that this disparity of conditions should be unnecessarily accentuated—a result which any award of the demands as they were presented, would necessarily bring about in some measure. In no event was it within our power to afford relief to men who are held under orders without actual employment.

What impressed me still more was the fact that we were confronted with demands of only certain employees of the railroads. In other words, we had to deal with a large system, which had to meet demands again and again from certain classes of its employees, while other classes of employees were neglected—forgotten. It may be that this neglect must be attributed to the fact that the pressure from other quarters was too strong.

There was still another difficulty—the arbitration was so framed that the engineers and firemen presented their sixteen demands, calling for the amendment of rules and increase of wages, and that the railroads withdrew all the demands they had made for corrections in those rules and rates. In other words, it read that anything that we granted better than that which the men already had, might be accepted; but wherever the men had anything better than we granted, that could be retained. They could combine the rules and the rates in such a way as to spell—Heaven knows what!

We were prevented from bringing about anything like equalization, because we were bound down to a consideration of certain distinct demands; we could not grant anything that was not asked for, and we could not correct anything in an effort to give a corresponding advantage in another direction. That hampered the arbitrators, and made it very difficult to arrive at any conclusion that would address itself to the judgment of an independent man. Notwithstanding these facts, after five months of sessions we came to a conclusion. We granted practically every rule that had been asked for, and during the hearings we had been told that the men were more interested in the rules than in the rates.

We granted many increases in the rates; I think there was but one point at which we fell below that which had been granted in the eastern award. In substantially every respect we granted more than the eastern award had given.

There was another consideration—the demand was for standardization of rates throughout the country. If we had gone very far beyond the award of the East, we of course defeated the very standardization for which the contention was made. So we felt compelled—that is, I did—to stay reasonably within the award of the East, whenever it covered any particular question. But for my part, it seemed more important to get intelligent and satisfactory rules for the men, to protect them as far as may be, in that respect, and to leave the rates reasonable, but subject to such changes, modifications and increases as later developments might justify. In other words, I felt that the men got a splendid foundation for the presentation of any just demands which they might have thereafter.

What is the result? New demands have now been submitted; only one of them is a renewal of a demand that we

*(In the arbitration proceedings in 1914-15 upon the demands of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen of the railroads in western territory, Mr. Nagel was one of the neutral members of the board which determined the award. Following the award, he was made the subject of severe personal criticism by the brotherhoods who charged him with unfairness toward them and partiality toward the railroads. In July, 1915, Mr. Nagel published a statement in which the limitations imposed upon the Board of Arbitration were set forth and the reasons for certain sections of the award were explained. In the address, an abstract of which follows, recently given before the St. Louis Railway Club, Mr. Nagel presents further views, based upon his former experience, as to the principles which should be made to control the proceedings of any future board of arbitration, such as that which may be called upon to decide upon the demands now pending on behalf of the trainmen's organizations.—Editor.)

were asked to pass upon—and that is the request for time and a half for overtime, in freight service—that is all—in spite of the complaints against the award which were sent broadcast over this country.

None of the other demands have been renewed at this time; the only one, I repeat, that has been renewed, requires time and a half for overtime in freight service. That demand we disposed of in conformity with the eastern award, and I regard that as presenting a very difficult question.

I cannot say that I think the matter has been satisfactorily disposed of. There is a difficulty; but for my part I could not believe that it is a safe principle to put a penalty as large as that, or perhaps any penalty, on overtime. It is a pretty drastic measure to resort to, and it is dangerous to both sides.

On the other hand, I would favor a rule which would be designed to discourage overtime just as much as possible. The service is not a light service, and ten hours is a good deal of time to work at that kind of business. While the exigencies of railroad work are such that no hard and fast rule as to hours can be made (we all know that); at the same time, it seemed to me that there should be a limit set somewhere; something short of the sixteen-hour limit fixed by law—that there should be something done to discourage and control unreasonable overtime. I admit that we did not settle it; I did not know how to settle it; but we had staring us in the face the adjustment that had been reached in the East, and the inherent difficulty of finding a rule that would fairly protect both sides.

We have been told, now, at least in some places, that there will be no further arbitration; and we are left to infer again that the public is not immediately concerned. I doubt both propositions. I think there will be other arbitrations; I do not think that my conduct in that arbitration was significant enough to destroy the system. Furthermore I think that the public is so vitally interested that all parties will hear from the public before they get through—and we may just as well remember that when the public is interested, it generally makes the decision. Certainly it does in legislative matters, usually in executive branches—and to some extent in judicial decisions.

The public is a very powerful factor in a republic, and it is liable to be in this matter. The only thing to do, therefore, is to present all these questions fairly and openly and without fear.

A public carrier is a quasi-public corporation, and in receiving its franchise from the state, it accepts corresponding obligations to the public. In other words, a carrier has got to move, no matter whether there is profit in the operation or not; it has got to serve the public, and the public is vitally interested in the character and in the continuity of the service rendered. One of the advantages enjoyed by the older railroad employees is that the continuity of the railroad service guarantees practical stability of employment. For that reason, I submit that every single question in connection with such demands presents itself in a new light.

If a stockholder is compelled to devote his capital to the service of the public, then he must have a right to ask of the public that the carrier be run under conditions that will make it possible to have some kind of a return. If that is not guaranteed by the conditions made, railroad building will stop—unless the government does it with its own money.

A great part of the railroad stock in this country is now held by new acquisition, and whatever we do, we have got to bear in mind that the income (which is dependent upon rates) and the outgo (which is largely measured by wages) must make it possible to have some kind of a return upon the investment. Without that, the machine cannot work—and eventually there will be no machine, at all. That is one fact. The next step is that the rates to be paid by the shipper, and the wages to be paid to the men must bear some relation to each other. If there is such a relation, it is a matter of accident, and not of method or system.

We were in session in Chicago for five months passing upon the wage question presented by the engineers and firemen. In another room sat one member of the Interstate Commerce Commission for, I think, several weeks, hearing evidence upon the question whether the rates paid by the shippers should be increased. We never got together; we were never permitted to look at both sides of the ledger; nothing was submitted that would enlighten us as to the relations between rates and wages to be awarded. I think if we had talked with that member of the Interstate Commerce Commission, probably there would have been some charge of conspiracy made against us!

According to the most obvious rules of successful business, the proprietor must know how much he receives before he determines how much he is to pay out.

The common carrier must be put in a position to establish a proper relation between the public's payment of rates and its own payment of wages. Now, that result will be secured satisfactorily by arbitration, or it will be done in some other way. There is no doubt that if we go on in this way and say: "We will not have any arbitration; whatever the arbitrators do is not satisfactory," we will have some kind of a commission in charge of both functions—the fixing of the rates and also of the wages—so as to make the representatives of the government responsible for the consequences of the whole decision. At present, no governmental agency is responsible for anything; if the rates are fixed in a particular fashion, and the road cannot get through with its income, the answer is: "You are wasteful; you do not manage right."

But if the responsibility is fixed upon one commission to fix both the rates (representing the income) and the wages (representing at least a large part of the outgo), then there will be some approach to a responsibility laid upon some federal power that will be compelled to make satisfactory decisions, or to give an explanation for failure. Now, it will come to that, unless we arrive at some plan of successful arbitration.

Turning to the matter under consideration, we were told that the roads could not afford to pay the increases if we allowed them. Well, if they could not at that time, and if they can afford now to pay the increase that is now asked, the roads furnish a better evidence of sudden prosperity than the most rosy reports that I have read from the Secretary of Commerce, up to this time. We have proof of marvelous growth in one year—if that can be done.

But I go further: If the railroads can grant these increases, and are contemplating granting these increases, then, in my judgment, they, as public carriers, are bound to consider the condition of the other employees at the same time. I see no escape from that. A private business may do what it will, as long as it can, but a public carrier, charged with a public obligation, is bound to consider the welfare, the safety and the security of every employee, and to put them all upon a basis where they can render satisfactory service to the public. I see no escape from that conclusion.

Now, people say: "Why don't these men press their demands?" The answer seems to be that they are not unionized. But that is no answer. I certainly do not object to unions; I am one of those who believe that if it had not been for the union, the wage earner would not be nearly where he is today. I do not deceive myself about that. This world is not altruistic by a long sight. There are very few proprietors in the railroad business or anywhere else that do not need prodding to be good; in fact, very few of us form an exception. But that does not relieve the public carrier from the responsibility to the men who are not unionized.

When an effort is made to put things straight, and light is thrown upon the facts, the public carrier ought to say: "I will take in the whole horizon: I will see the whole picture;

I am bound, in justice to my stockholders and to the public, to consider all the employees, and to have the advances made with relative justice to each." You may do in a private factory what you wish; but you cannot do with a public carrier what you wish. It employs men who serve the public, upon the careful performance of whose duty the security and the service to the public at all times depends; you have got to consider that.

Now, we are told, there will be no more arbitrations. I say there will be probably no more arbitrations such as we had, because I trust that no government will ever again compel a one-sided arbitration like that.

In my judgment, the railroads ought to take the position that if there are any more arbitrations, the whole situation must be submitted, including the interests of men and women whose demands have not been presented, as a body—so that the whole wage scale of the railroads may be fairly considered at one and the same time. They belong together; they depend upon each other; they should support each other; in the long run, that method is better for all of them than any of the methods that have been pursued up to this time.

The public is interested now; you may read that in every newspaper. Congress will be interested; everybody will be interested. It is indeed a public question. And why not? It involves a public carrier with quasi-public employees. What is a railroad but a public service agency?

How far are we from government ownership now? Heaven knows I do not want government ownership. Nothing is so incompatible with the idea of government ownership of railroads as a republic; no kind of government would manage railroads so poorly as a republic; we know that.

If you want to see railroads managed properly, go to Germany where, as we are told, they have what is styled "Bureaucracy." They can do it. I was there in the early part of the war, and I saw something of it. I saw perhaps the most complete and sudden transition from a peace stage to a war stage that was ever known in the world—from Sunday morning to Monday morning, there was a complete transition. Sunday everything was moving along under civil authority; Monday morning, everything was under martial law. Wagons that were hauling private products one day were hauling ammunition the next morning. I watched them for a number of days; at the end of a few weeks I read the simple statement—it was no boast, simply an announcement by the government—that mobilization had been completed, and that there had not been a single railroad accident. Now, there is management for you. I do not believe we can do that. I am afraid of government ownership, because if we once enter upon enterprises of that kind, there will be need for a concentrated power of which we have never dreamed, and that will mean a complete change in our government. That would be inevitable—that change—and if employees think that they will get any more from the government than they are now getting from private ownership, let them examine into the salaries of any department in Washington.

In my department there were a few men who drew $6,000; a few others at $5,000; a few more at $4,000; a larger number at $3,000; $2,250 was a very good salary; positions paying men $1,800 were sought; the great majority of the force getting below that. Now, those are the salaries paid by the government—and I do not want to see our railroads get to that basis—but I want to also say that, in my opinion, we are steering that way.

What is ownership, by the way? Ownership is in the main the right to dispose of the income. I do not much care who has the title to stock, so long as I get the dividends.

What does the government do now? It fixes the rates shippers have to pay, doesn't it? Suppose the government were to go a step further and fix the wages? There is the whole situation from beginning to end. What is there left for the stockholder but to sit down and guess whether he will get anything at the end of the year, as a return on his investment? And if we cannot arrange these things among ourselves, without doubting the motive of every man who serves—if we cannot have arbitration, does anybody suppose there will be anything left but a commission that will fix both ends?

We are bound to come to some conclusion, one way or the other, because we are not going to live in eternal doubt. The American people are an intensely practical people, and we sometimes resort to mighty short expedients to get to a practical result.

We have "preparedness" on our minds now. That ought to be suggestive. What does preparedness mean? Appropriations? Yes, it does mean that to a good many people. Increase in the army? Yes, it means that to a good many people. A navy? Yes, it means that. But does it mean anything else?

Without going into details, it means an industrial system—it means a relation between business and the government—it means something besides a harassing policy designed to keep everybody in hot water. It means also a protective policy which will allow business to live, so long as it does the right thing—which will not make a business a prey for penalties simply because it is successful.

We cannot be big if we are ashamed of big things—we are bound to have them. This is true even with the ordinary industry; that has been so in Germany; it has been shown in France, and it is being developed in England now, because she has been compelled to resort to exactly the same methods that her antagonists employed at an earlier date.

If we are going to have a system of preparedness, let us not dream that we are just going on as individuals, everybody doing as he pleases. There must be a system, with a head to it—not forty-nine different kinds of troops, but one army, commanded by one man—not a debating society to determine who is to go there and who is to come here.

That is what we will come to—business, not to sustain the army, but to sustain the civilian while the army is out—that is what preparedness means.

And our common carriers? Why, it will mean highways all over this country—railroads and other roads and canals not built where we now know that we want to send troops and provisions, but built fifty years in anticipation of possible needs—the establishment of roads and railroads that can be utilized at the command of a central power when an army is to be moved; that is what preparedness means—if we are serious about it.

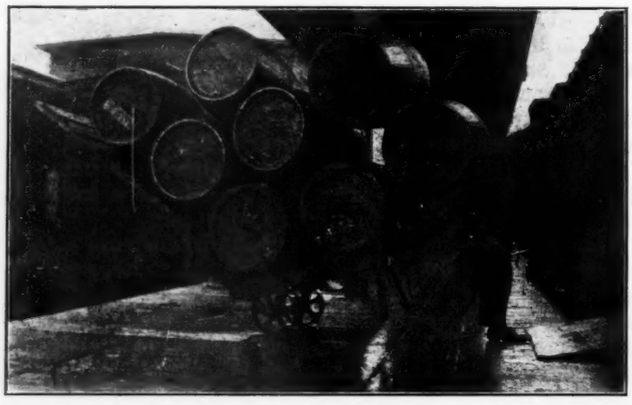
That is a real problem for a republican form of government. All I wish to say here, now, is that the more we have of unrest, the more we have of unwillingness to consider together, the more do we demonstrate the unsafety of such a course, where our interests should be mutual. The more we realize that the proprietor and the employee have the same interest in reality, the more we demonstrate our capacity to do these things properly, calmly and fairly in council with each other across the table, the faster will we move on the way to true preparedness, and the surer will we be to stave off the threat of centralized government control of all quasi-public machinery.

BAGDAD RAILWAY.—According to the Hamburger Nachrichten the Bagdad Railway is now completed, except for the stretch of 393 miles which will not be completed till after the war. The stretch from Islahie to Mamure has been completed in spite of the war and was opened to traffic in February last. Of the 1,512 miles from the Haida Pasha Station in Constantinople to Bagdad, 1,119 miles are completed, the portions to be completed are 26 miles from Darak to Karabuna (between Haida Pasha and Aleppo) and 367 miles on the Aleppo-Bagdad stretch, of which only the Ras-el-tin-Samara portion is completed. These gaps, it is stated, do not cause great difficulty, as their place is taken by unusually good roads.

L. C. L. FREIGHT HANDLING METHODS AT SILVIS TRANSFER, ILL.

At Silvis Transfer, near Rock Island, Ill., the Chicago, Rock Island & Pacific operates an l. c. l. freight transfer station, at which a number of interesting improvements have been worked out during the last two or three years. The facilities at this station consist of a covered platform 30 ft. wide and 950 ft. long with one unloading track on the north and four loading tracks on the south side. North of the unloading track is another covered platform 12 ft. wide and 700 ft. long beyond which are two additional unloading tracks.

The main platform, which was built 10 years ago, was laid with 3 in. by 12 in. planks crosswise of the platform. These planks soon wore down and made very rough trucking. To overcome this, ⅜-in. strips of steel 7 in. wide, spaced 10 in. apart, were placed lengthwise of the platform, to carry the truck wheels. As the planks between these steel runways



Taking Eight Empty Barrels into a Car

wore down, making it difficult to keep the trucks on the steel strips, they were later replaced with ¼-in. sheet steel to provide a continuous steel trucking surface 14 ft. wide and 930 ft. long.

Following the installation of the steel trucking surface, a larger truck was installed with 12 in. wheels 3 in. wide, carrying a frame 27 in. wide and 5 ft. 9 in. long with a 7 in. nose and with handles bent to an 80 deg. curve. Racks were also provided for these trucks which with a few 4-wheel Reynolds trucks, a dozen 6-wheel dollies and a few long arm levers and pinch bars, comprise the equipment used at this point.

The men originally worked in crews consisting of one check clerk, one caller and five truckers. The number of truckers was reduced to four and after the installation of the steel runways and the large hand trucks to three. On May 1, 1914, 100 additional 2-wheel hand trucks were secured, after which a modified drop truck system was installed whereby the truckers were kept out of the cars which were being loaded and the number of truckers in each gang was reduced to two. At the same time the truckers' rate per ton was reduced from 16.01 cents to 10.66 cents, but by removing the necessity for the men to enter the cars, the two men handled about the same tonnage previously handled by three. This change, however, required some addition to the stevedore force.

In September, 1912, the gangs were placed under the bonus system, their former wage being guaranteed. Some of the crews earned a good bonus from the start, while others preferred to depend on the guarantee and in some instances did not do as much work as formerly. On January 1, 1914, the guarantee was discontinued, since which time every crew has earned considerably more than its old rate, while the freight has been handled at a reduced cost per ton. Paying each gang as a unit has placed a premium on team work and the men help each other wherever they can to increase the tonnage handled by the gang as they realize that they are in reality a little firm by themselves.

On April 30, 1915, this station completed its first year with the modified drop truck system and showed an average saving of 4.59 cents per ton, as compared with the previous year. This reduction and the elimination of a second handling of a considerable amount of freight effected a total saving of $7,219.47. During the same time the number of located "overs and shorts" decreased to 377.

To decrease still further the number of errors charged against the loading at this station, the stevedores were given an additional quality bonus on September 1, 1915. With this arrangement each stevedore receives an increase of $10.50 per month for loading about 200 cars of merchandise. From this bonus the following amounts are deducted for each error located against him:

For	one error	$3.36	or 32	per cent
"	two errors	5.46	" 52	" "
"	three "	7.14	" 68	" "
"	four "	8.40	" 80	" "
"	five "	9.24	" 88	" "
"	six "	9.66	" 92	" "
"	seven "	10.08	" 96	" "
"	eight "	10.50	" 100	" "

Should a stevedore not work a full month a proportionate amount is deducted from his bonus for the time lost to induce him to work regularly. The penalty for the first error is made high purposely to induce him to take no chances. And

Pulling Five Barrels of Oil at a Time

to put him on his guard for the penalty is the same as if he had dropped a pocketbook containing this sum, in which case he would probably be willing to rehandle all the freight in the car to recover it. In September 5, in October 7, and in November 8 stevedores had no located errors charged against them, while the total number of errors charged aginst the stevedores for the first three months in which this system was in effect decreased from 114 to 34 or a total of 80.

At the time the quality bonus for stevedores was adopted a system of fines was also established for check clerks for errors of the following nature:

For loading a partial or entire shipment destined to a point on a foreign line on the wrong truck or making it up for the wrong car, thus causing the shipment to go astray.

For failure to chalk junction points on shipments going to station order cars, causing such shipments to go astray.

For checking shipments without exceptions when it develops afterwards that they were over, short, or in bad order.

For leaving freight in a car when it was supposed to have been removed.

Fines of $3, $2, and $1 are assessed for the first, second and third errors and $0.50 for each succeeding error. Any error which does not come within the classification mentioned above and for which it is shown that the check clerk is re-

sponsible is charged at one-half the above rates. All exception reports are handled by the agent and foreman with the check clerk at fault and he is given ample opportunity to investigate the errors for his own information and satisfaction.

On the initiative of the foreman, a self-supporting, co-operative dining room has been established at this station in the form of a club with a membership of 55, including all the platform and office force with the exception of three colored employees and eight clerks and laborers who either go home for lunch or carry cold lunches. Starting originally in a box car and a limited membership, this club has grown to the figure stated above and eating facilities are now provided in a part of a room formerly used for storage purposes. The men have provided a large hotel range and all other cooking and dining utensils and employ a regular cook. Meals are furnished to the men at an average cost of $0.20 and the club is self-supporting with a small surplus in the treasury.

We are indebted to C. W. Thatcher, agent, Silvis Transfer, for the above information.

RAILWAY MATTERS IN CONGRESS

WASHINGTON, June 8.

For the next two weeks neither the House nor the Senate will touch any legislation of any importance, practically all the members having their eyes on Chicago and their ears to the ground. Yet railroad bills of importance are pending and they will, no doubt, force themselves on the attention of Congress as soon as that attention shall be once more turned to practical business.

Two small items marked progress last week. The Senate passed, without opposition, the bill, S. 3069, introduced by Mr. Cummins, to correct the fault in his amendment to the Interstate Commerce Act adopted in March, 1915, forbidding railroads to limit their liability for loss and damage of freight and baggage. By this new amendment, which undoubtedly will be passed by the House, baggage on passenger trains will be excepted from this requirement, and on substantially all freight, except livestock, the carrier may require the value to be stated by shippers and may make rates in proportion to value. The old custom of limiting the value of a passenger's baggage to $100, or $150, may again be put in effect.

The other item was a short speech by Senator Newlands on his bill to enlarge the Interstate Commerce Commission and increase the salary of the secretary of the commission. His speech was left unfinished, however, as the Senate went into executive session and cut him off.

More than a dozen bills, in which railroad men are interested, are pending in either the House or the Senate. Not the least of these, in general importance, is the post office appropriation bill, on which there is still persistent controversy. One of the amendments pending would refer the question of payment to the railroads, whether according to space or according to weight, to the Interstate Commerce Commission to be investigated and reported on at the next session; but Senator Cummins on June 1 introduced an amendment to empower the commission to fix the rates, instead of reporting back to Congress. The fourth assistant postmaster general, James I. Blakslee, has stirred up a hornets' nest in the Senate by sending letters broadcast to postmasters, urging them to have citizens send protests to the Senate against the action of the committee of that body contrary to the wishes of the Post Office Department, and telling the postmasters that "the Senate Committee had surrendered to the railroads" in the matter of railway mail pay.

The Pomerene bill, to codify the federal statutes relating to bills of lading, is still being watched with great care and the commercial interests who have been working for the bill are predicting that it will be passed, although it has failed in three previous Congresses. This bill, if it passes, will make criminally liable any person who forges a bill of lading or the agent who issues a bill that does not represent an actual shipment; also it would make the carrier liable to a bona fide consignee or banker who pays money on a bill of lading issued by an authorized agent, even though no goods had in fact been received by the carrier.

Other important bills are the Senate Joint Resolution No. 60, calling for a general investigation of the subject of railway transportation; the Cullop bill, which would include signalmen at interlocking cabins in the hours-of-service law, limiting the work day of such men to eight hours in all the larger cabins; and the bill introduced by Mr. Hay in the House, to provide for a "National Council of Executive Information."

Joint Resolution No. 60, which has been hung up in the House for two months, has received the endorsement of the party in power, and so has the bill to empower the Interstate Commerce Commission to supervise the issue of railroad stocks and bonds; but the latter has not been touched by the Senate at this session, and does not seem likely to be.

As the summer progresses there is an ever-increasing jam of legislation in Congress. Already it is practically certain that the session will run well into August. Even the appropriation bills will not have been enacted by the end of the fiscal year (June 30). Of the so-called "big bills" which the Administration has declared must be enacted before adjournment, the shipping bill, the Philippine bill, and the conservation bills are of overshadowing importance, and will command attention to the exclusion of all matters deemed less important.

PREVENTION OF ACCIDENTS AT GRADE CROSSINGS

The report of the special committee on the prevention of accidents at grade crossings, presented at the meeting of the American Railway Association in New York City May 17, and reported in the *Railway Age Gazette* of May 19, page 1100, recommended the adoption of standard styles, dimensions, colors, etc., for signs used at crossings; a uniform code of rules for watchmen, and that action be taken, in conjunction with the National Association of Railway Commissioners, to secure uniform legislation in the several states. The association adopted the recommendations of the committee.

The remainder of the committee's report, slightly condensed, is given herewith:

INTRODUCTORY

The development of the automobile has greatly increased the density of travel over the main highways, and has introduced a new element of danger at grade crossings which were formerly but little traveled.

The radius of a horse-drawn vehicle was at the most 25 miles from home, and the driver soon became acquainted with local conditions. Today the radius of a commercial automobile is nearly 100 miles and there is no limit to the distance that may be covered by an automobile which is touring.

The prevention of accidents at grade crossings is a live question in every section of the country. The Public Service Commissions have taken action in some states, and the Grade Crossing Committee of the National Association of Railway Commissioners devoted much space to this subject in its last report. Local authorities and civic organizations are urging all sorts of legislation, and there is great danger of widely varying laws being passed.

The manner in which protection is given by the different methods in use varies greatly. Crossing gates are painted black or white, or striped. To some gates flags of various colors are attached. Others have signs on them. Crossing

watchmen are found using green flags, white flags, combinations of these colors, and in some cases carrying disks of various colors with the word "STOP" painted on them. At night crossing watchmen use green lights, white lights and red lights. It is the practice of some roads to permit crossing watchmen to motion to a traveler on the highway to come ahead; others forbid it, so that one driving an automobile is many times at a loss to know what the form of protection furnished by the railroad company means.

The states of New Hampshire and Vermont have passed legislation making it compulsory for the state authorities at their expense, to erect and maintain "caution approach" signs in the highway at a distance of 400 ft. to 500 ft. on each side of every grade crossing. In one state it is the duty of the Public Service Commission and the other the Highway Commission. The sign in New Hampshire differs from that in Vermont. We also find that many railroads throughout the country have, at their own expense, erected at some grade crossings, and are maintaining, "caution approach" signs in the highways. These are of different design, and some of these roads which have done this have already found difficulty in maintaining signs in the highways where they cannot be readily inspected from the track and where the railroads have no authority to prevent their removal.

Need of Standards and of Legislative Sanctions

One of the first steps that should be taken is to standardize throughout the country all forms of crossing protection. The signs prescribed by law and approved by state authorities vary in design, and represent a large investment. They have been effective in the past, and there is no reason why they should be changed at the present time. There are a number of forms of crossing gates, all of which are equally good. However, there is no reason why the painting of these gates, the style of signs displayed on the gates, and the colors of the flags and lights used at night by crossing watchmen could not be made uniform.

Some of the committee attended a joint meeting between representatives of the railroads of New England and the Public Service Commissions of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut and New York, which was held in Boston on February 23, 1916. All of these commissions are actively considering the need of legislation to enable them to deal more effectively with crossing protection. Mr. Niles (New Hampshire) is chairman of the Grade Crossing Committee of the National Association of Railway Commissioners. In a report to that body, he says:

"Reports come from various parts of the country of gates broken by automobiles driven through them. A flagman can do much, by voice and signal, to prevent such acts of recklessness, but he should be intelligent, active and alert. The flagman's job is not a job for cripples.

"The question has been raised as to the color of the flag to be used. Certainly the same color should be adopted throughout the country, that there may be no misunderstanding as to the significance of the signal. In view of the use in railroading of flags of various colors for specific purposes, and the general employment of white for the crossing tender's flag, it is probable that that should be the color for universal adoption.

"It is probable that in every State the ordinary crossing sign is required by law, but now, when travel is largely in automobiles, moving at from twenty to fifty miles an hour, the crossing sign frequently does not come in sight in time to slacken speed. . . . It is necessary that warning be given some time before the crossing is reached. . . . It does not seem reasonable to require the railroad to be responsible for the maintenance of signs off its right of way, and often so situated as not to be visible to its section men making their regular tours of inspection. The signs, therefore, must be erected and maintained by the municipality. They should be of conspicuous design, containing in large letters the smallest possible number of words, so that their meaning can be grasped at a glance, and of uniform pattern, and, as nearly as possible, uniform distance from the track, and at every crossing. This uniformity is essential to adequate protection. The driver of an automobile should know that he will not come upon any crossing of which he has not had warning, and should be able instantly to recognize the warning sign and appreciate its significance. To accomplish this end, the signs must be in universal use."

Encouraging Progress

Again, in March of this year the Public Utilities Commission of California, upon its own motion, held a series of five public meetings. . . . The railroads presented full statistics of grade-crossing accidents and other data. It was demonstrated that grade-crossing accidents had increased over 1,000 per cent in the last five years in the State of California. There was a generally favorable expression of opinion that some legislation should be secured to require all vehicles to stop before passing over dangerous crossings. The railroads of California had taken a position, before the meetings, that they thought might be considered drastic, in suggesting the location of "caution approach" signs in the middle of the highways, but as a result of these meetings a very favorable sentiment has been created in favor of such action, and at the suggestion of the chairman of the commission one railroad is already arranging to experiment with it.

A joint committee of representatives of automobile clubs and interurban trolley lines in New York state, appointed by the Public Service Commission for the Second district, is working on a standard form of sign. The Public Service Commissions of Iowa, Oregon and California had sent for copies of the New Hampshire law and sign, with a view of adopting them for their own use. The Public Service Commission of Pennsylvania was ready to order one railroad to put up "caution approach" signs at one grade crossing. The judge of one of the Chicago courts, who is also president of the Citizens' Traffic and Safety Commission, announced that he proposed to start an agitation for a uniform set of signals for use by railroad crossing flagmen; and there must be many other cases, only a few of which have been called to our attention. This seems to be a clear indication of the feeling of the public authorities.

The necessity of standardizing crossing protection in all its forms is so well recognized, your committee has so far, we believe, been able to temporarily postpone local or indiscriminate action until the association has been given an opportunity to co-operate with the public authorities.

We believe it makes but little difference as to what form of sign or signal, or combination of color, is used to give warning, so long as it is uniform throughout the country. The cost of making any changes will be so small, compared with the benefits that would accrue, that it is not worthy of consideration. . . . We have every reason to believe that if a committee of this association is empowered to speak for the railroads and agree to the adoption of standard forms of crossing protection, such as signs, colors of lights and flags to be used by crossing watchmen, such a committee can arrange to meet a similar committee appointed by the National Association of Railway Commissioners, and that a set of standards can be readily agreed to, which will soon become universal throughout the country. The joint approval of the American Railway Association and the National Association of Railway Commissioners would make it very difficult to justify any local legislation that does not conform with such standards.

The committee consists of J. A. McCrea (Long Island), chairman; J. Q. Van Winkle (C. C. C. & St. L.); C. L. Bardo (N. Y. N. H. & H.); L. E. Jeffries (Southern); Howard Elliott (S. P. L. A. & S. L.); W. J. Towne (C. & N. W.), and W. R. Scott (S. P.).

The Design of Plants for Dumping Coal Cars

Considerations of Speed, Efficiency and Safety Govern Arrangement of Cradles, Clamps and Other Features

By J. F. Springer

A CAR dumping plant consists ordinarily of two distinct but co-operating parts. These are the power incline and the car dumper. The capacity of the plant is naturally determined by the tonnage actually dumped. This is affected by the vertical lift-and-return of the cradle, and this in turn by the regularity and synchrony of delivery from the incline. Or, we may trace the matter in reverse order—first, frequency of delivery from the incline, then frequency of the dumper cycles of operation. We shall have the limit of efficiency when the two frequencies exactly equal one another. If incline operation must be slackened to let the dumper catch up, or if the dumper must be slowed down for the incline, there is inefficiency. Consequently, one of the large features of plant design concerns itself with the equalization of operation of the two parts.

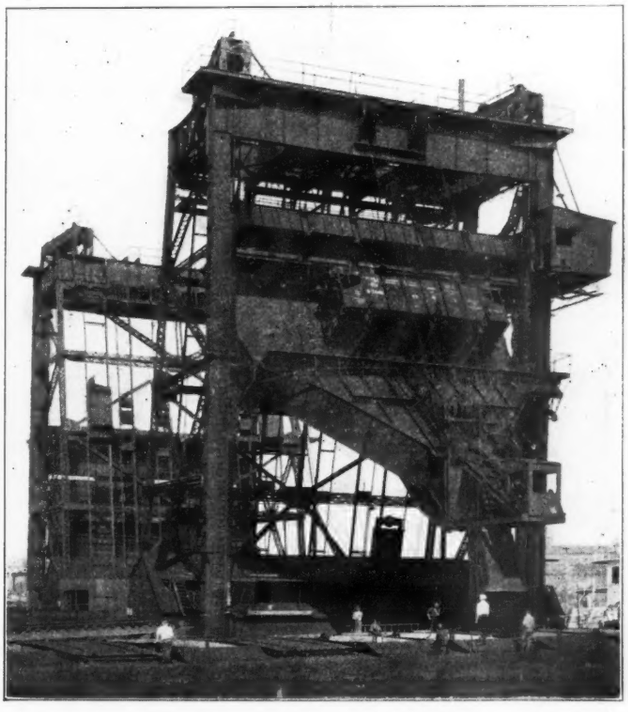
A Dumper at Conneaut, Ohio

This equalization is primarily controlled by the selection of the level of delivery from the incline to the dumper. This shortens or lengthens the vertical lift-and-return in the dumper and lengthens or shortens the lift-and-return on the incline. A recent plant on the Great Lakes has this level eight feet higher than an old plant at the same location. This change was made possible largely because the time of the return trip on the incline has been shortened partly by a more rapid return of the mule car. Instead of dependence upon gravity alone for the return, the car is hauled down.

A word may be said at this point relative to the superiority in capacity of car dumping plants equipped with power inclines over plants where the whole lift is made by the dumper. Perhaps it is too much to say that the double machine has double the capacity; but the truth must be somewhere near that. The car dumper proper in a double plant is performing only the latter halves of a series of operations concerned in lifting from grade level to dumping level. Naturally, it performs its own cycle in about half the time otherwise necessary.

The Cradle

The operating cycle of a dumper consists in receiving, hoisting, overturning, turning back, returning to initial position, discharging. The first and last operations are performed, normally, through the agency of the loaded car acting as a pusher. The car to be dumped is run onto a short length of track supported by a platform on rollers or wheels. These wheels all have their planes of rotation in a vertical plane transverse to the track. The movable platform stands on the horizontal surface of an L-shaped cradle. The vertical portion of the cradle is at the front side of the tower. This cradle, together with the movable platform and the loaded car, is hoisted, the original vertical and horizontal surfaces remaining so, until the dumping point is reached. The cradle with the platform and load is then rotated on a horizontal axis coincident or nearly coincident with the line of intersection of the horizontal and vertical leaves. This axis suffers a vertical displacement precisely equal to the lift and no more. It is important to bear this in mind.



A Double Installation for the Hocking Valley at Toledo

The cradle, platform and car are all rotated on this axis through an angle which in the most recent dumpers runs up to 160 deg., that is to say, the overturn of the car lacks only 20 deg. of being complete. This corresponds to a tipping action of 70 degrees with a British endwise dumper.

At some time during the lift or the overturn the loaded car must be shifted transversely to bring one side into contact with the inside vertical face of the cradle. This face supports a load through about the whole of the rotating operation. If actual contact were reserved until overturning began, there would perhaps be a shock to avoid. Further, the empty car together with the platform must be returned to the initial position to restore continuity of track. The shifting of the platform first in one direction and then in the other is one of the cardinal problems of the car dumper.

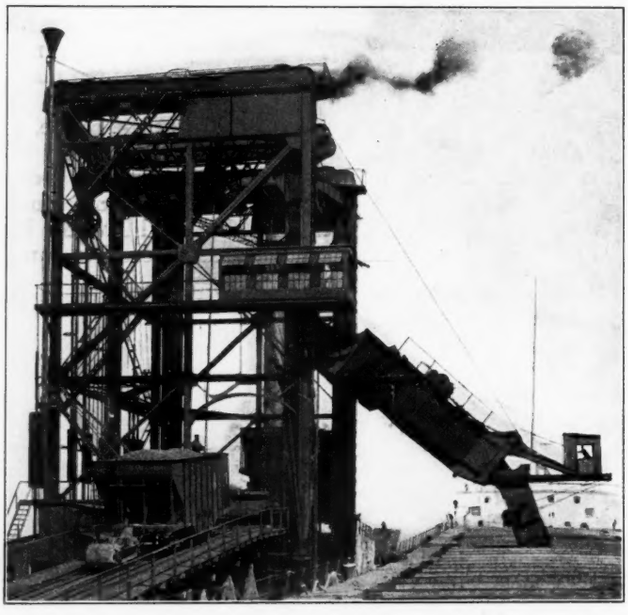
The Car Clamps

Another principal problem concerns the control of the loaded car and platform during the overturn and of the empty car and platform during the return rotation. What-

The Hocking Valley Dumper at Toledo

ever methods are adopted, they must be of very great flexibility because of the wide variations in loads and dimensions of cars. At the final moment of overturn, the car and platform are nearly upside down. The tendency of car and platform to slide down the one leaf of the cradle under the influence of gravity is resisted by a group of steel ropes which are arranged to press against the top of the car—that is, against the top edges of both side walls. Each rope forms under the pressure a kind of loop against which or in which the car presses. For the first 90 deg. of the overturn, these ropes are idle in so far as offering resistance to any gravitational movement of the car. However, the ropes yield to the top of the car as it protrudes more and more forward. By the end of the first 90-deg. movement, the second edge of the top of the car has come into full pressure position against the ropes, so that from this point on the ropes will have to resist a gravitational effort of both sides of the top. During the final 70 deg. of overturn, the ropes come under full stress.

There must be an intermediate piece between rope and top of car for the purpose of protecting both. Further, it is convenient to guide the ropes to some extent by grooves arranged in these intermediate pieces. Whatever arrangements are employed to supply these intermediaries, the so-called "clamps," they must not interfere with the empty during its discharge from the cradle nor with the following loaded car. As the cars vary greatly in height and width



A Dumper at the Pennsylvania Dock at Sandusky, Ohio

as well as in length, there must be great flexibility. Furthermore, it is highly desirable that the temporary removal be accomplished entirely automatically. These requirements are not easily fulfilled, and involve some rather complex arrangements, several types being used.

PREPAREDNESS DAY AT WILMERDING

The Westinghouse Air Brake Company, Wilmerding, Pa., will within the next few weeks complete an order for the manufacture of 1,250,000 British 18 lb. (3-in.) shrapnel shells complete, including cartridge case, steel shrapnel shell and time fuse. The contract required that deliveries be started in four months and be completed in 14 months. It was necessary in order to meet these conditions to erect new buildings and purchase a very considerable amount of special machinery and a large volume of material. Some idea of the extent of this preliminary work may be gained from the fact that an outlay of over $6,400,000 was required before there was any return. While it is true that the British government made a certain advance, it was necessary for the Westinghouse Air Brake Company to give a bond covering this and it was liable for the expenditures that had been incurred if it was impossible to make good on the contract. Today shells are being completed at the rate of 10,000 a day and the entire order will be ready for shipment six weeks within the 14-month limit.

The Westinghouse Air Brake Company was, of course, fortunate in that the standard equipment which it manufactures requires most careful and accurate workmanship, and it had developed and perfected a splendid organization for this sort of work. This was helpful to some extent in solving the organization problem, inasmuch as it was only necessary to extend it along lines which had already been fully developed; on the other hand, it was necessary to hire and break in several thousand employees for the special work.

Inasmuch as railway shops, if war should be carried on by this country, will probably become an important factor in the manufacture of supplies and munitions, it seemed wise in the interests of our national welfare to have as many railway mechanical department officers as possible become familiar with the work which is being done at Wilmerding, and with this in mind, A. L. Humphrey, vice-president and general manager, invited railroad mechanical department officers to inspect the ammunition plant at Wilmerding on Monday of this week, June 5. In response to this invitation a party of 175 made a thorough inspection of the work which is being done in manufacturing these shells at the Air Brake Company's works, and later in the day also had the privilege of visiting the Westinghouse Electric & Manufacturing Company's ammunition plant where 4.5-in. and 8-in. high explosive shells are being made, and the Westinghouse Machine Company's plant at East Pittsburgh where larger shells up to 12-in. sizes are being manufactured.

Some idea of the extent of the work which has been carried on in making the 1,250,000 3-in. shells at Wilmerding may be gained from the fact that each shell contains 327 bullets, or a total of 409,000,000 for the entire order. To make these bullets required 179 carloads of lead and 1,300,000 lb., or 26 carloads of antimony. To prevent these bullets from rattling or moving in the shell resin to the extent of 4,320 barrels, or 43 carloads, was required. The boxes and crates in which the shells were shipped required 166 carloads of lumber. The complete shell weighs 18 lb. 8 oz., and a variation is allowable each way of only 5 grams.

When the contract was taken no expert was available to assist in laying out the plant or arranging the details of manufacture and it was necessary for the company's officers to look after this work. To go into the detailed problems which it was necessary to work out would require a long treatise, but some data as to the gages which were required may give an idea of the seriousness of the problem as a whole. At the time the contract was undertaken there were said to be only about 3,000 tool makers in the United States. Very few of the gages can be used more than 10,000 or 15,000 times, and as 10,000 completed shells are being turned out each day, it practically means almost a complete set of gages every day. Moreover, many of the gages are absolute, particularly for the fuses, where a variation of one thousandth of an inch would in many cases be cause for rejection. The shrapnel shell itself requires 55 gages, the brass cartridge case 17 gages, and the complete fuse 170 gages.

The visitors followed the process of manufacture of the shrapnel shell and the brass cartridge cases during the morning and were served with lunch in the gymnasium of the Welfare Building, after which they adjourned to the auditorium in the same building for a short program.

H. H. Westinghouse, president of the Westinghouse Air Brake Company, extended a cordial welcome and briefly directed attention to the necessity for thoroughly and carefully studying the problems concerned with the maintenance of an army in case of war. For every fighter at the front six workmen will be required at home to provide the necessary supplies and ammunition at the front.

D. F. Crawford, general superintendent of motive power of the Pennsylvania Lines West stated that just before France entered the present conflict it had 3,075 75-millimeter guns in white lead. Today the United States government has only about 123 guns of a corresponding size. In case of war in this country transportation men will be among the first to be requisitioned, not only for looking after the carrying of troops and supplies, but also for the manufacture of munitions. Two of Mr. Crawford's railway friends in England were called to the ministry of munitions shortly after the declaration of the war. American railway officers ought to study carefully the mechanism of the artillery in order to be prepared to organize their shops for its manufacture in case of necessity.

M. J. Caples, vice-president of the Hocking Valley, spoke of the necessity of having energetic, intelligent men, with plenty of initiative, to carry on the work of manufacture of supplies and munitions. In his opinion the remarkable record which has been made by the Germans is largely because of the vocational training which had been given to its boys and young men in recent years. Railroad men ought to give of their time and energy to help reform the educational system of this country so that we may be better prepared in time of conflict.

A. E. Manchester, superintendent of motive power of the Chicago, Milwaukee & St. Paul, remarked on the wonderful record made by the Air Brake Company in developing in so short a time an effective organization for carrying on the work, involving as it did the employment of 2,500 or 3,000 men and women.

Robert Quayle, general superintendent of motive power of the Chicago & North Western, thanked the Air Brake Company for its loyalty to the national government in opening up its plant and so frankly taking the railroad officers into its confidence as to its plans and the detail methods of performing the work. While he was for peace, he believes thoroughly in being prepared for trouble, believing that that in itself will do much to prevent war.

A. L. Humphrey then gave a brief illustrated talk covering in a general way the various operations in the manufacture of the shells and making more clear by diagrammatic sketches some of the processes which had been observed earlier in the day. He prefaced his remarks thus:

"Europe is teaching us by moving pictures, as it were, what war in all its phases means today and how ill-prepared we are to meet any such terrible stress. Similarly, we brought you gentlemen to Wilmerding today so that we might show you graphically what our company, for one, is able to contribute to a national preparedness program; to give you a general idea of the intricacies of the art of making ammunition; and last but not least, to impress upon you that if foreign aggression ever makes it necessary for the railroad shops of the country to engage in ammunition manufacture, you will find all of us here ready and willing to give you the benefit of our very best experience and advice.

"The time is entirely too short to permit my talking to you at length regarding the difficulties we encountered in connection with our foreign orders, the rigidity of the specifications we had to adhere to, the trouble we had in obtaining certain materials, etc. All of these points are, however, quite fully covered in a paper I had the privilege of reading last week before the Society of Engineers of Western Pennsylvania, a copy of which I am going to take the liberty of sending to each of you as soon as printed. In addition, I hope at the end of this program to show you stereopticon views of various types of shells, details of the British 18 lb. shell, evolution of the shell and cartridge case, the great number of gages required in their manufacture, and many other things that a hurried trip through the shops failed to disclose.

"I consider it particularly appropriate for the railroads of this country to become enrolled in the national preparedness measures, not only because their great shops, with their heavy machinery and skilled mechanics, could be quickly converted into ammunition factories, but also because our great transportation systems form the most vital connecting link between the raw product and the factory, and between the factory and the battle front."

During the afternoon the visitors went through the fuse department and then on to the works of the Westinghouse Electric & Manufacturing Company and the Westinghouse

Machine Company. The Westinghouse Air Brake Company employees' band greeted the visitors on arrival in the morning, entertained them while assembling in and leaving the auditorium and on leaving the works.

ITALY'S NUMEROUS ACCIDENTS RESULTING FROM UNPREPAREDNESS

By Walter S. Hiatt

Our Special European Correspondent

Italy's railway accidents since the end of 1915 have been more frequent and serious than those in France and England combined. Not counting minor accidents involving merely damage to freight trains, but no unusual loss of life, there were three bad accidents during the nine week period beginning December 27 and ending March 4. In these three accidents 52 persons were killed and 169 more or less injured. While each of the accidents had a local cause, the general and underlying reason is that Italy's railways were not prepared for war when she undertook her campaign against Austria last May. Her lines have simply been unable to handle the immense freight and passenger traffic made necessary by the war.

To point out that most of the accidents have taken place in the northeast of Italy, within or bordering on the war zone, where much of the army traffic is concentrated, is merely an excuse. France, for instance, has had far more traffic to handle in her war zone and with railways crippled by an invasion, and so far as can be known there has not been in that zone a single serious accident resulting in loss of life. The only possible cause in Italy was unpreparedness. Had France not been prepared from a railway point of view, she would have had many fatal wrecks, doubtless by the dozen, considering the conditions under which her railroads have operated, many of them being within an hour or a half hour of the firing line. The causes there now contributing to interruptions and accidents are worn rolling stock and work done by overworked, overwrought trainmen.

The statement that Italy was and is unprepared for war from a railway point of view is not intended as a criticism of her railway system. But that Italy's railways were and are unprepared for war may be seen from the fact that Italy has only 11,000 miles of line, that much of this is single track; that per 10,000 population she has 3.09 miles of railway as compared with 4.72 in Spain and 6.37 in France; that with a population of 35.5 millions, five millions less than France, and with an area just over half of that of France, she has barely one-third of the latter's mileage.

On the other hand, large sums of money were being spent on Italy's railroads previous to the war and, putting aside the question of cleanliness on her passenger trains, her railways were being rapidly put into first class condition. The locomotives on any of the lines from Rome to Florence and Milan, or from Genoa to Milan, in fact, anywhere in the central or northwest of Italy, are among the handsomest in Europe. Generally speaking, the rolling stock is in excellent condition, with the freight cars modelled somewhat after those of the United States, being strong and roomy and equipped with modern devices. The express and first class passenger trains compare favorably with those of other countries in Europe.

Possibly the moral to be drawn from the present deplorable condition of the Italian railways is that to wage war properly in these days railroad transportation must be prepared and planned as carefully as big guns and soldiers and other fighting equipment. At least the Italians applauded this sentiment vigorously in Rome this past February when Premier Briand of France made a speech to the Italian senators and deputies declaring that one of the reasons the allied powers would win was because of the reorganization and perfection of their means of transportation. The recognition in Europe of the necessity and usefulness of the transportation element has come tardily in many quarters which formerly were busied with "diplomatic" and other questions that seemed of paramount importance.

I well recall a political high-brow in the Ministry of Foreign Affairs at Paris who, when I visited him a year ago, said to me with condescending graciousness: "Railroads? What have they to do with war?" A lot of water has run under the bridge since then, some of it stained with blood, and time is a great teacher and leveller.

Today there is a tendency to ask: "Diplomats? Politicians? What have they to do with war?" It was heartening to hear Premier Briand become enthusiastic about the value of transportation and speak of the solution of this problem as one that gave hopes of winning the war.

Perhaps the most interesting fact in connection with his remarks was that they were received by the Italians as if he were stating a truism, not as if he were advancing a new idea. On this peninsula they have learned a dear lesson regarding railroad transportation, a lesson that has cost them millions in money, in undelivered or delayed freights, both commercial and war, including shipments that had to be delivered at the front to provision the couple of million soldiers already struggling there in the mountains or uplands.

The accidents that are taking their toll of life seem to be regarded by the Italian public as unavoidable hardships of war, or as one of the penalties for not having been prepared. While the full facts have been given the newspapers, uncensored, there have been few expressions of indignation regarding the wrecks. The few expressions have been rather ones of sorrow that the soldiers on leave, coming home for a fortnight with their families, should, after surviving the risk of perishing at the hands of the enemy, be killed or injured in the trains.

The accident which closed the old year took place near Bologna, outside of the way station of San Lazzaro. A passenger train carrying both civilians and soldiers ran full speed into the rear of a freight train with the result that the freight was derailed, cars thrown over, and 17 persons killed and 60 injured. The combination of circumstances causing the disaster were fog, no signal lights on the freight, and no instructions from the station master at Mirandola to the engineer of the passenger train that a freight train was in the section of track ahead.

Following this accident was another occurring between Padua and the way station of Vigodarzere in which two passenger trains collided, killing six passengers and wounding some dozen others.

The most serious of all the accidents this year until the present time, and one not in the war zone, took place February 26, at 1:30 o'clock in the morning, near the town of Cortona, to the south of Florence. The wrecked train was entirely military in character, the passengers being exclusively soldiers. While the train was going at full speed a rail appears to have spread with the result that almost the entire train was thrown down a 15 ft. embankment, killing 19 soldiers and wounding 79 others. The loss of life and the great number of injured was largely due to the use of wooden cars. Two of these cars were absolutely broken into splinters by the shock which followed the sudden halting of the train as the engine was derailed. So violent was the strain on these two cars that not a whole piece of either remained.

Another serious accident took place the night of March 4, 13 miles from Ancona, on the Adriatic sea. Again, it was a military train, which had just left Castellammare. It collided with a fast train from Ancona, and 10 passengers were killed and 30 injured.

Conference on Wage Demands of Train Employees

Railway Conference Committee and Officers of Brotherhoods Begin Negotiations on Eight-Hour Basic Day

NEGOTIATIONS between the railways and the four organizations of train employees—engineers, firemen, conductors and other trainmen—that on March 30 served demands on the roads for the establishment of the eight-hour basic day and time and one-half for overtime, were begun at a conference in the auditorium of the Engineering Societies building, New York, on June 1. The first few days were taken up entirely with the discussion of technical details as to the application of the demands. Just before the close of the session on Tuesday of this week the presentation of the railroads' position was begun.

The railways were represented by the National Conference Committee of the Railways, of which Elisha Lee, assistant general manager of the Pennsylvania Railroad is chairman; with it also sat J. G. Walber, secretary of the Bureau of Information of the Eastern Railways; J. W. Higgins, executive secretary of the Bureau of Information of Western Railways, and Charles P. Neill, manager of the Bureau of Information of the Southeastern Railroads.

The brotherhoods were represented by A. B. Garretson, president of the Order of Railway Conductors, who acted as spokesman; W. S. Stone, grand chief engineer of the Brotherhood of Locomotive Engineers; Timothy Shea, assistant president of the Brotherhood of Locomotive Firemen and Enginemen; T. R. Dodge, assistant president of the Brotherhood of Railroad Trainmen, and L. E. Sheppard, vice-president of the Order of Railway Conductors. The general chairmen of the four organizations on each road, to the number of several hundred, were also in attendance and furnished information when called upon relating to the schedules on their roads.

At the opening of the conference those not directly connected with the conference were requested to leave the auditorium, but at the conclusion of the first session Mr. Lee announced that by agreement of both sides the conferences would be thrown open to the public press.

"Both parties to the controversy recognize," he said, "that it is of such unprecedented magnitude, and so directly affects the interests of the whole country, that the public ought to have all the facts. If the railroads must add to the wages of a portion of their employees many millions of dollars, it is plain that this means an additional cost to the transportation industry of the country, in which the people are vitally interested. An open conference, in which there will be a full and frank discussion of the demands made by the employees, certainly ought to enable the public to determine what is fair and just."

It was decided to meet daily from 10 a.m. to 1 p.m. The first day's session and part of the second were devoted to checking up the list of roads and classes of service represented. Mr. Lee stated that his committee must be governed by the specific authorizations which it had from the different roads, while the brotherhood leaders insisted that all roads and classes of service for which the organizations had contracts should be included. After checking up the lists some additional authorizations were secured over-night by telegraph. Mr. Garretson stated that if the necessity should arise to "go back to the men and retire the men from service" the organizations would deal with the railroad systems as a whole regardless of whether the committee was authorized to represent all of the subsidiary companies.

Explanation of the Demands

On Friday morning Mr. Garretson began the formal presentation of the demands, reading them section by section and giving explanations of their purpose and meaning, in which he was aided by the other brotherhood officers. The terms of the demands are as follows:

Article 1. (a) In all road service 100 miles or less, 8 hours or less will constitute a day, except in passenger service. Miles in excess of 100 will be paid for at the same rate per mile.

(b) On runs of 100 miles or less overtime will begin at the expiration of 8 hours.

(c) On runs of over 100 miles, overtime will begin when the time on duty exceeds the miles run divided by 12½ miles per hour.

(d) All overtime to be computed on the minute basis and paid for at time and one-half times the pro rata rate.

(e) No one shall receive less for eight hours or 100 miles, than he now receives for a minimum day or 100 miles for the class of engine used or for service performed.

(f) Time will be computed continuously from time required for duty until released from duty and responsibility at end of day or run.

Article 2. (a) Eight hours or less will constitute a day in all yard and switching service. The minimum day's pay for 8-hour yards shall not be less than the present day's pay for 10-hour yards. Provided, that in yards having a minimum day of more than 10 hours, the present day's pay as in effect January 1, 1916, will be continued with the eight-hour day.

(b) Time to be computed continuously from time required for duty until released from duty and responsibility at end of day or run. All over 8 hours within any 24-hour period to be computed and paid for at the rate of time and one-half time.

(c) All overtime to be computed on the minute basis.

Article 3. (a) Eight hours or less at present 10 hours pay will constitute a day's work in hostling service.

(b) Time to be computed continuously from time required for duty until released from duty and responsibility at end of day or run. All over 8 hours within any 24-hour period to be computed and paid for at the rate of time and one-half time.

(c) All overtime to be computed on the minute basis.

Article 4. Any rates of pay, including excess mileage or arbitrary differentials that are higher, or any rules or conditions of employment contained in individual schedules in effect January 1, 1916, that are more favorable to the employees, shall not be modified or affected by any settlement reached in connection with these proposals. The general committee representing the employees on each railroad will determine which is preferable and advise the officers of their company. Nothing in the settlement that may be reached on the above submitted articles is to be construed to deprive the employees on any railroad from retaining their present rules and accepting any rates that may be agreed upon or retaining their present rates and accepting any rules that may be agreed upon.

In some cases the brotherhood officers were not in entire agreement as to the intent of the demands or gave their interpretations subject to correction by W. G. Lee, president of the trainmen's organization, and W. S. Carter, president of the firemen's brotherhood, who participated in the framing of the demands.

Mr. Garretson stated that the demands apply to all freight and yard service, excepting road passenger service, but including the handling of passenger cars in yards. He said the purpose was to substitute 8 hours for 10 hours as the equivalent of 100 miles, or a speed basis of 12½ miles an hour instead of 10 miles an hour in road service, and to reduce the length of the working day in yard and hostling service to 8 hours, without change in the present rates of pay per day or per 100 miles.

Regarding the demand for a higher rate for overtime he said: "Our attitude is that overtime is largely a controllable factor, when it becomes uneconomical. The expression 'punitive overtime' is not a bad term for it. The first overtime rule I ever put in cost the company during the first month $35,000 and 16 despatchers. The second month it didn't cost anything. We hope to reform you by making overtime expensive." He said that placing the overtime on the minute basis removed any incentive for the train crews to "drag" for 30 minutes in order to get pay for an hour.

Mr. Shea said that an erroneous impression had gone forth that the demands provide for overtime after 8 hours, whereas, under Article 1 Section C, on runs of over 100 miles there would be no overtime as long as the trains maintain a speed of 12½ miles an hour. On a run of 125 miles, he said,

overtime would begin at 10 hours; on a run of 150 miles, at 12 hours, and on a run of 200 miles there would be no overtime until after 16 hours.

"Then your proposition does not limit the road service to 8 hours a day, but it does limit to a speed basis of 12½ miles an hour," said Mr. Lee.

"Exactly," said Mr. Garretson. "It is an effort to apply the eight-hour day to railroad service as nearly as is consistent with the necessities of that service. In other words, we want to make it costly for you to work us above the eight-hour period, or its equivalent on longer runs."

Mr. Shea also said that testimony in the western arbitration case showed that 78 per cent of the through and irregular freight service on the western roads for October, 1913, made an average of approximately 113 miles between terminals in 8.2 hours and that therefore the 12½ miles speed basis would not mean any increases to the train crews in that percentage of the through and irregular freight runs.

Article 4, Mr. Garretson said, is "nothing more nor less than our usual saving clause."

When Mr. Lee suggested that it was a little more stringent than usual he admitted that it had been drawn to cure some weaknesses that have existed in former ones and to prevent some encroachments upon the rights of the men.

"We are not standardizing downward," he said. "We always standardize up, leaving the highest standard until it is submerged by a better one." Members of the railroad committee asked several questions about the meaning of Section (f) in Article 1. Mr. Stone said the wording was intended to cover cases where men are required to perform service before they reach a place where they can actually report for duty and to insure compensation for all time during which they are held responsible. Mr. Garretson said that the rule would not require the payment of an arbitrary allowance for "preparatory time" in addition to continuous time, but Mr. Stone pointed out that under the saving clause the men could elect to retain either the arbitrary, if one had been in effect, or the continuous time. Mr. Lee made the point that one road might have to pay for the arbitrary at overtime rates, while another in the same territory would only have to pay for the time at pro rata rates. "In such a case," said Mr. Garretson, "we will do everything possible to fix it so that both will pay at time and one-half. As I said before, we are standardizing upward."

The discussion of preparatory time led to a bitter attack by Mr. Shea on the results of the arbitration of the demands of the western enginemen last year. Mr. Shea insisted that the men had been "jobbed" because he said when the board decided that pay should begin from the time the men were required to report for duty several roads reduced the preparatory time. Mr. Higgins pointed out that the board had not prescribed any specific amount of preparatory time and that the men were being paid for every minute of their time.

"If a man runs 100 miles in three hours and fools around two hours besides and is paid only for 100 miles he is not being paid for his full time," interjected Mr. Stone.

"The demand as to yard service," Mr. Garretson said, "establishes for the yard man what we would be glad to do for the road service, were it possible—the eight-hour day in its purity. That is on account of the fact that he can be relieved when the clock reaches a certain point. Men in transit can't be relieved as men in a fixed service can."

Discussion of the effect of the demands as applied to yard service demonstrated that on the New York, New Haven & Hartford, which now has an eight-hour day in some yards, pay would have to be increased to the 10-hour basis, and that in yards now operated on an 11 or 12-hour basis the 11 or 12-hour pay would have to be continued for eight hours' work. Mr. Lee pointed out that a man now paid for 11 hours at a rate of 40 cents an hour would receive under the terms of the demand, $4.40 for eight hours and $6.89 for 11 hours. Mr. Dodge said he understood that the rule would not require any time out of the eight hours for meals. Mr. Higgins asked about the application of the rule to the case of a yardman released from duty and called back in the evening for two or three hours' work. Mr. Stone said that under Article 2 (b) he would have to be paid for a minimum day of eight hours at time and one-half, but that the company could "beat the rule" by keeping him on continuous time instead of releasing him.

Position of the Railways

At the conclusion of the explanation of the demand Mr. Lee put into the record a statement defining the position of the railroads, as follows:

"Before taking up the formal discussion of your proposals, our committee, as expressing its attitude and on behalf of the companies it represents, hereby restates the position of said companies as follows:

"The Railroads have no desire to change either existing rates, pay or working rules, nor to reduce the earning possibilities of employees under their existing rules, but inasmuch as your proposals contemplate fundamental changes in operating methods and practices on which the schedules have been built up, this committee reiterates that in connection with and as part of the consideration and disposition of your proposals there shall be open for consideration and disposition those provisions in the schedules or practices thereunder governing compensation in the classes of service affected by your proposals or those in conflict with the following principles as they apply to such classes:

"(a) No double compensation for the same time or service.

"(b) Same classification for purposes of compensation to be applied to all members of train and engine crew.

"(c) Two or more differently paid classes of service performed during the same day or trip to be paid proportionate rates according to class of service, with not less than a minimum day for the combined service."

This was received without comment and Mr. Lee proceeded with a number of questions regarding the application of the demands to specific cases. He cited a branch line run of 85 miles, now made in nine hours, for which the conductor now receives $4. Mr. Garretson said that under the proposed rule he would receive 75 cents for one hour overtime or $4.75. Mr. Lee cited another run of 112½ miles, made in nine hours also, and Mr. Garretson said he would receive only $4.50 or pay for nine hours, because he ran at the proposed speed basis of 12½ miles an hour. Mr. Stone insisted that the company would at once reduce the schedule of the first train to eight hours. It was also brought out that on a run of 150 miles made in 12 hours, or at the proposed speed basis, the crew would be paid for 12 hours, or a day and a half, while on a run of only 100 miles made in the same time, 12 hours, the crew would receive a day's pay for eight hours plus four hours overtime at time and one-half, or a total of a day and three-fourths.

On local freight runs now paid for on a monthly basis, Mr. Garretson said that the men would decide whether to retain the old or the new rates. There was a long discussion as to the application of the overtime rule to crews held away from home terminals or tied up under the hours of service law.

Mr. Lee asked about the computation of overtime where a separate allowance is made for switching en route. Mr. Garretson said that would depend on the provisions of the schedules; in most cases the switching time would not be included in computing overtime, but that under some schedules it would be. The same thing, he said, would apply to other arbitrary allowances, but where no arbitrary is allowed the time would be included in computing overtime.

Mr. Lee also cited a number of cases where trip rates have been made, taking into consideration the long hours required and where the same rates would have to be paid for eight hours.

Mr. Garretson said that if a committee ever sits down to make a general revision of schedules, a great many inequalities would be removed which cannot be changed under the present plan. "A movement like this leaves all inequalities unchanged except these specifically covered by the proposals," he said.

"You don't agree that this is a good time to get them out," said Mr. Lee.

"We have no authority for anything but this proposition," was the reply.

The discussion in detail of the brotherhood's proposition was continued until just before the close of the session on Tuesday. Mr. Garretson and Mr. Stone said that the decision as to whether the old rates and rules should be retained would be made by committees for each organization separately. Both agreed also that the demands would apply to mixed trains but not to solid mail or express trains.

No man can tell what the full effect of the demands would be on existing schedules, Mr. Garretson said, "It is not going to cut the trains in two but it is going to reduce the tonnage to a point where the speed basis can be maintained. Whatever you cut will be a factor in the cost of operation. There is no question whatever that it does mean an increased expense and I have no desire to evade it, but we don't agree with you as to the totals."

Mr. Stone said the cost would not be as great as present methods of operation would indicate.

Mr. Lee then began the explanation of the railroad position, as indicated by the statement presented on Saturday, saying in part:

"I want to say that this answer of the railroads to the men is in no sense a counter proposition. It is a proposition that is contingent on a change of basis. There is no attempt or desire to take away anything from the men. The present schedules, rates of pay and conditions might be called the low level—that is the lowest possible level. We cannot go below that, either with your proposition or with ours. The high level, the maximum, is your proposition. That is the highest this can go.

"Now, between those two levels, or on one line or the other, this thing is bound to be settled. There are certain things in the present schedule that seem to us perhaps proper under the present basis. But with any change of basis there should be some adjustments, some arrangements, whereby proper adjustment could be made.

"In view of the interpretations you have given us on your proposition (as wherein you say that in Article 4 they can go all through the schedule, wherever any questions of rates or hours are affected, and that the men alone can accept or reject them) it seems to us in view of that explanation that schedules that in the past have been negotiated between the men and the management—it seems to us no more than right that the management should have something to say in such a negotiation, if the basis is changed.

"I want to make that perfectly clear—that this proposition of the railroads only contemplates going into the schedule where a basis is changed. For instance, if these schedules are built up largely on ten miles an hour, 100 miles or less, 10 hours or less, certain things in these schedules were proper under that basis. There are probably certain other things in the schedules that would not be proper if that basis were changed.

"It isn't the purpose to take away anything, it is merely for the purpose of permitting the railroads to have something to say when these things are ironed out, and is contingent—understand that fully—is contingent on a change of basis. It is not a counter proposition. If the basis isn't changed then this is null and void. If it is changed, then we feel that we should have something to say about it."

Mr. Garretson made no definite reply before the session adjourned. He took the position that the conditions suggested by the railroads could not be accepted, without reducing the earning power of the men.

Mr. Lee said that the roads merely proposed to discuss the question and that there would be no reduction unless both sides were satisfied or the men got something else in exchange.

At the session on Wednesday Mr. Garretson and the other brotherhood leaders announced that they desired to ask a number of questions as to the application of the railroad proposition to specific instances provided for by the present schedules. Mr. Lee said that the committee had laid down no definite rules, that the proposition was entirely contingent upon a change in the present basis, and that the only intention of the railroads was to insist on the right to discuss the effect on existing schedule provisions. But when the brotherhood leaders insisted that the railroad position could not be intelligently discussed without something more concrete Mr. Lee proposed that they ask their questions which he promised to answer after a conference with the other members of the committee.

The remainder of the day was taken up with the questions of the brotherhood leaders, who seemed particularly anxious to find out what the railroads proposed, under the principal of "no double compensation" in cases where the schedules now provide an arbitrary allowance, for such incidentals as initial, final or intermediate switching, etc., in addition to the time or miles made on the run.

For example Mr. Stone cited a case of a crew running 100 miles in 7 hours and spending 3 hours in switching in addition, for which it is now paid by a special allowance of 3 hours. As the crew is now paid for 100 miles or 10 hours, plus 3 hours, he wanted to know whether the railroads would consider that double compensation for the same time. In some of the cases cited the schedules provide that the allowance shall be paid as overtime, which under the demands would take time and one-half. In another case cited the crew runs 100 miles and spends 2 hours in loading stock, in a total of 8 hours, for which it is now paid for a full day plus 2 hours. In another the crew runs 80 miles in 6 hours, switches for 2 hours, and is paid for a full day plus 2 hours In another the crew runs 150 miles in 10 hours and is delayed 2 hours at the terminal and is paid for 150 miles or a day and a half plus 2 hours.

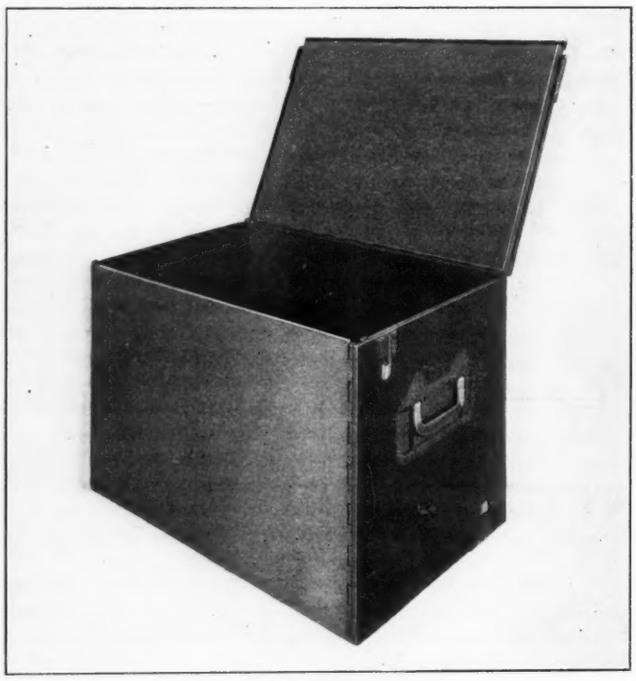
Mr. Garretson cited the case of a crew on a short turnaround run of 15 miles each way, for which it is now paid for a full day. He wanted to know whether the roads would assert the right to send this crew out on another run without paying for another day. Another crew runs 100 miles in 4 hours and an hour later is called to run another 100 miles, which it makes in 7 hours. It would now be paid for two days. These cases arise every day, Mr. Garretson said, and he wanted to know the attitude of the railroads as to how such runs would be paid for under the principles announced in the railroad statement.

AUSTRO-GERMAN ROADS AND RAILWAYS.—Petrograd advices state that interesting information regarding the work accomplished by the Germans and Austrians in the rear of their armies on the Eastern front has been received there from a thoroughly reliable source. In addition to greatly developing railway communication behind their armies the Germans and Austrians have made roads across the marshes in many places. The forests have been cut down in Volhynia and Poland, and the trunks of the trees have been used for the roadways. The central point of this network of new roads and railways is Livow, where four new lines of railway unite. A junction has been constructed connecting Sokal, Stoyanoff, and Brody, and this line of great strategic importance for the Austrians, because in the event of the Russian occupation of Lutck direct communication will remain between Cholm and the strategic lines to Livow, Volhynsk, and Brody, the headquarters of the staff of the Austrian army of Field-Marshal Boehm Ernoli. The total length of all the railways constructed by the Austrians during the winter is more than 600 miles, leaving out of consideration the narrow-gage field lines. Nearly all the new railways are double track and they have been constructed by the forced labor of Russian prisoners and the population of the occupied districts.

A STEEL FREIGHT CONTAINER

While important developments have been made in recent years in increasing the tractive power of locomotives and the strength and size of freight cars for the purpose of increasing train loads, there has been a marked tendency toward the adoption of light wood and fiber-board containers for package freight, brought about largely by the increase in the price of box lumber and by the endeavor to reduce the weight of shipments. This has resulted in many cases in increasing the number of claims for damage. Until within the past year, during which the efforts of the railroads and of the shippers toward reducing loss and damage claims have resulted in an important improvement, the total payments for loss and damage had been increasing rapidly for several years.

As a possible solution for this problem the Pneumatic Scale Corporation of Norfolk Downs, Mass., has devised a container for package freight, consisting of three thin steel



Steel Freight Container

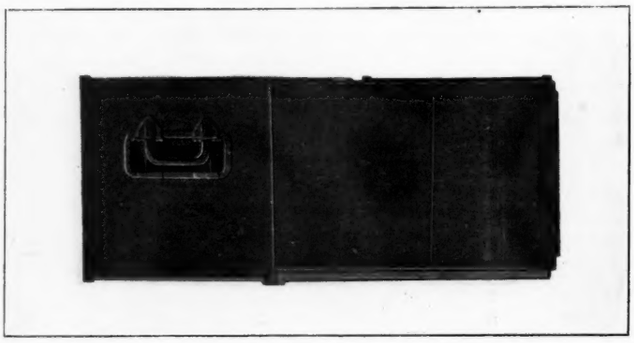
sheets, the two outside flat sheets being securely sweat onto the two sides of a third sheet, which is corrugated. The box is provided with protected hinges running the entire length of its sides and ends which enable it to be knocked down to a thickness of about ¾ in. It is equipped with a pilferproof locking device for which each shipper may be provided with his private lock if desired. Handles are provided flush with the ends to prevent their being torn off. Space is provided in the handle recesses for shipping instructions where they are protected from injury from coming in contact with other boxes, a common source of loss with ordinary containers. The box can be manufactured of any desired size. While its first cost in comparison with wooden boxes is considerable, it can be used many times.

Some interesting tests of these boxes in comparison with wooden boxes have recently been made by C. B. Breed, professor of railroad engineering, Massachusetts Institute of Technology, in collaboration with Prof. H. W. Hayward, in the testing laboratory of the institute. For the comparative tests there were employed a standard wooden box used by the American Sugar Refining Company, made of ⅜ in. hemlock with ⅞ in. pine cleats 2 in. wide around the edges and one of the steel boxes with the same inside dimensions, 13⅞ in. by 19⅞ in. by 14⅝ in. The weight of the wooden box was 11.5 lb. and of the steel box 21.2 lb. The boxes were filled with 120 lb. of sugar in sixty 2-lb. cartons.

A report of these tests by Professor Breed states that when pressure was applied at the diagonally opposite corners the steel box was shown to be 10 times as strong as the wooden box. When filled with the sugar and dropped 3 ft. onto a concrete foundation twice the steel box showed only a slight injury at the corner and none of the pasteboard cartons were injured, while the wooden box was demolished and the contents badly damaged on the first test.

A common source of damage to boxes is the dropping of some heavy material of small size or another box cornerwise onto the side or top. Tests made by applying heavy loads over a small area of a side or end of a box, according to the report, showed the steel box to be six to nine times as strong as the wooden box. When a heavy metal ball and an iron rod were dropped onto the steel box it sustained only a slight indentation, while the boards of the wooden boxes were broken through, leaving the contents uncovered. A single steel box was then successively subjected to all of the tests which had demolished the wooden box, and sustained practically no damage.

Tests and compilations were also made to show that the



Steel Freight Container Collapsed

use of the steel boxes instead of wooden cases would greatly increase the number of pounds of paying load for each cubic foot of car space. The steel box occupies about 15 per cent less space than a wooden box of the same inside dimensions, and its use would therefore make it possible to utilize the car space to better advantage. The results of this investigation indicate that there is from 25 to 50 per cent more weight per cubic foot of space occupied if shipments are in the steel box than if they are in wooden boxes. This also measures the possible increase in freight earnings per cubic foot of space under the existing practice of charging for the container at the same rate as for the contents. Tests showed that in a standard box car 930 steel boxes can be loaded in place of 798 wooden boxes of the same size, provided they are piled in tiers in a manner so as to leave the least vacant space in the car.

Recognizing that shippers would not be inclined to use steel containers if the result were materially to increase the freight bill on account of the increased weight of the container, the manufacturers of the box argue that it would not be illogical for the carriers to absorb the dead weight of such a container in their freight rates, just as they now absorb the increased dead weight of steel underframe cars or special equipment. They believe that in view of the fact that it can be used over and over again, the shippers can be induced to pay the relatively high first cost for the steel container, provided the total rate charged for shipments in the steel container shall be no more for the outgoing loaded box plus its return to the shipper in its collapsed empty condition than is now paid by the shipper for his outgoing ship-

ment of the same amount of merchandise in the ordinary wooden box. The railroads would then be carrying more weight for the same money, but, it is claimed, would derive the benefit from the saving in claim bills, in economies in freight handling charges and in the more efficient use of car space.

WOOD PRESERVATION STATISTICS

The proceedings of the American Wood Preservers' Association contain some valuable statistics on the quantity of wood preservative consumed and the amount of wood treated by wood preserving plants in the United States in 1915. These are compiled by the association in co-operation with the forest service of the United States Department of Agriculture. The following information is abstracted from this report:

In 1915, the 102 wood preserving plants operating in the United States during the year treated about 141,858,963 cu. ft. of timber. In 1914, with 8 less plants operating, 17,723,676 cu. ft. more timber was treated. In spite of this decrease in the total output there was an increase of 1,986,286 cu. ft. in the amount of construction timber treated. The number of cross-ties subjected to treatment in 1915 was 37,085,585, a reduction of 6,761,402 from the figures of 1914. The amount of wood block paving increased 319,467 sq. yd. or 11 per cent, and the preservation of piling aggregated 9,308,419 lin. ft., an amount less than that reported in 1914 by 2,612,182 lin. ft.

The accompanying table shows the consumption of wood preservatives used by the treating plants by years and the kinds of preservative and quantity. The consumption of zinc cloride exceeded that of any previous year and the amount of creosote used was slightly more than the amount used in 1914, which was a decrease of about 27 per cent from the quantity used in 1913. For the first time since the active development of the wood preservation industry in the United States, the consumption of domestic creosote exceeded that of the imported oil, and would tend to show a gradually decreasing dependence upon the foreign supply for American consumption. The price of domestic creosote in 1914 was approximately 3½ cents per gallon, F.O.B. plant, and that for zinc chloride 3 cents a pound. Owing to the uncertainty of foreign shipments and the total lack of them at times during the past two years, the prices of both kinds of preservatives have practically doubled.

CONSUMPTION OF WOOD PRESERVATIVES BY THE TREATING PLANTS IN THE UNITED STATES, 1909-1915

Year	Number of plants	Creosote. Gallons	Zinc Chloride. Pounds	Other preservatives. Gallons*
1909.....	64	51,431,212	16,215,109	†
1910.....	71	63,266,271	16,802,532	2,333,707
1911.....	80	73,027,335	16,359,797	1,000,000
1912.....	84	83,666,490	20,751,711	3,072,462
1913.....	93	108,373,359	26,466,803	3,885,738
1914.....	94	79,334,606	27,212,259	9,429,444‡ 2,486,637
1915.....	102	80,859,442	33,269,604	3,205,563‡ 1,693,544

*Includes crude oil, coke-oven tar, refined coal-tar and carbolineum oils.
†Statistics not available.
‡"Paving oil."

Oak ties take the lead in the number treated and constitute 45.53 per cent of the total number of all species; yellow pine ties are second and constitute 23.03 per cent. The number of ties treated with creosote and zinc chloride form 46 and 48 per cent, respectively, of the total number treated. This is quite a change from the proportion in 1914 when 51½ per cent of the ties were treated with creosote and only 38 per cent with zinc chloride. The number of ties treated by zinc chloride and creosote in combination was 2,625,681, over 50 per cent of which were oak. The number of ties treated with miscellaneous preservatives was only 6,520 in 1915 as compared to 2,625,681 in 1914.

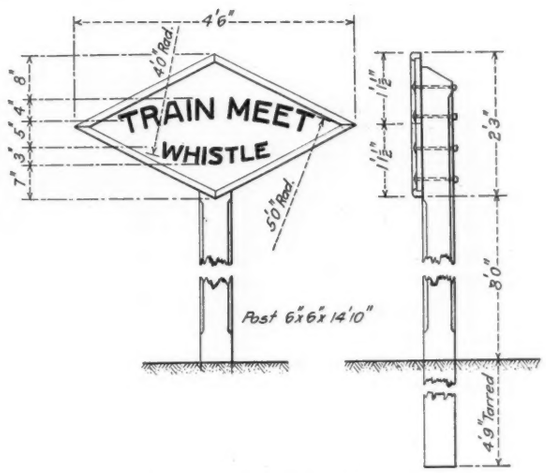
TRAIN-MEET WHISTLE-SIGNAL BOARD

Rule 14 of the Standard Code of train rules of the American Railway Association now has a thirteenth paragraph, paragraph *n*, providing a whistle signal, two long blasts and one short one, to be used to indicate that a train is approaching a meeting point; and the Virginian Railway, in adopting this whistle signal, has also adopted as standard a "train meet whistle board"—a diamond shaped sign on a post standing about 9 ft. high. The design of this board is shown in the drawing.

These posts are set about one mile from the first switch by which a train may enter the siding at meeting stations; and the whistle signal, when given, is a reminder to the conductor that a meeting point is being approached; and if the engineman fails to give the signal the conductor and the trainmen are required to stop the train.

The regulation station whistle signal, one long blast, is given at the proper place independently of the train-meet whistle signal. The circular issued in connection with the adoption of the board says:

"While the men on the rear of a train may not in all cases hear the train meet whistle signal given by the enginemen according to requirements, it is possible to determine by the preparatory moves whether or not the engineman has the correct understanding. It is intended, therefore, that in case the signal is not heard, the trainmen shall, in the absence of other indications, take steps to bring the train to a stop at the proper place, keeping in mind the need of exercising care in so doing."



Train-Meet Board, Virginian Railway

Officers and trainmen both express decided satisfaction in the use of the new board. It has no lamp, but it is usually seen in the night, as well as in daytime, and is an unmistakable reminder. It has been found to have a good effect even in the case of trains moving out of a siding; that is to say, the back side of a board provided for movement in the opposite direction serves to refresh the trainmen's minds in regard to the next meeting station This sign has been spoken of by some as almost equivalent to a block signal, as respects opposing trains.

The board is painted white and is lettered in black. The post is painted black for a height of 4 ft. 6 in. from the ground and that part of the post below the surface of the ground is painted with a heavy coat of tar. Posts are set 12 ft. from the center line of the track.

Rule 90, of the Standard Code reads, in the latest revision as follows:

"Trains must stop at schedule meeting points, if the train to be met is of the same class, unless the switch is right and the track clear.

"When the expected train of the same class is not found at the schedule meeting point, the superior train must approach all sidings prepared to stop, until the expected train is met.

"Trains must stop clear of the switch used by the train to be met in going on the siding.

"The engineman will give signal 14 *n* at least one mile before reaching a schedule meeting point with a train of the same or superior class, or a point where by train order the train is to meet or wait for an opposing train. Should the engineman fail to give signal 14 *n*, as herein prescribed, the conductor must take immediate action to stop the train."

TRAIN ACCIDENTS IN APRIL[1]

The following is a list of the most notable train accidents that occurred on railways of the United States in the month of April, 1916:

Collisions

Date.	Road.	Place.	Kind of Accident.	Kind of train.	Kil'd.	Inj'd.
*†17.	N. Y. N. H. & H.	Bradford.	rc	P. & P.	5	30
24.	Erie	Middletown.	rc	F. & F.	1	0
26.	St. Louis & S. F.	New Albany.	bc	P. & F.	0	0
26.	Chicago, M. & St. P.	Plevna.	bc	F. & F.	0	1

Derailments

Date.	Road.	Place.	Cause of Derailm't.	Kind of train.	Kil'd.	Inj'd.
7.	Balt. & Ohio	Wildwood.	d. truck	F.	1	0
9.	N. Y. N. H. & H.	Waterbury.	ms.	P.	0	4
19.	Carolina, C. & O.	St. Paul.	d. switch	P.	0	4
20.	Balt. & O. S. W.	Blocher.	unx	F.	0	0
22.	Penn.	Brookville.	slide	F.	1	2
24.	Erie	Big Flats.	acc. obst.	P.	0	0
26.	Penn.	Cook's Mill.	slide	F.	1	1
26.	New York Central	Amherst.	.....	F.	1	0
27.	Southern	Faber.	acc. obst.	P.	2	4

Other Accidents

Date.	Road.	Place.	Cause of Accident.	Kind of train.	Kil'd.	Inj'd.
6.	Chicago, I. & L.	Bedford.	boiler	P.	0	2

The trains in collision on the New York, New Haven & Hartford at Bradford, R. I., on the 17th were westbound local passenger No. 633 and westbound express passenger No. 25, the express running into the local while it stood at the station. The rear car of the local was wrecked and took fire, and with the other cars in the train, together with the station buildings, passenger and freight, was burnt up. Five passengers were killed and about 30 injured. This collision was reported in the *Railway Age Gazette* of April 21 and April 28.

The trains in collision near Middletown, N. Y., on the 24th were an eastbound locomotive without cars and a work train which was at a standstill. Three cars were wrecked and one workman was killed. The collision was due to negligence on the part of both trains; the standing train in failing to flag properly and the other one in failing to control speed within safe limits.

The trains in collision at New Albany, Miss., on the 26th were a northbound passenger and a southbound freight. Both engines were slightly damaged. No passengers or trainmen were seriously injured. The cause of the collision was an error on the part of the train despatcher. He annulled an order making the passenger train subordinate to the freight, but the freight was not informed of the annulment.

The trains in collision on the Chicago, Milwaukee & St. Paul at Plevna, Mont., on the 26th of April were through freights. Seventeen cars were wrecked and one trainman was injured. The eastbound train was standing at the station and the westbound, which ought to have entered the side track, approached at high speed.

The train derailed at Wildwood, Pa., on the 7th was an eastbound freight. Six cars were damaged and one brakeman was killed. The cause of the derailment was the failure of an archbar in a truck of one of the cars.

The train derailed near Waterbury, Conn., on the ninth was southbound passenger No. 1235. The engine fell down a bank and the baggage car followed it part way. The engineman and three passengers were injured. The derailment was due to a loose switch.

The train derailed at St. Paul, Va., on the evening of the 19th was northbound passenger No. 4. The rear coach was thrown off the track at a defective switch and fell against a car on a side track. Four passengers were injured. The switch had become disconnected from the switchstand because of a lug dropping off.

The train derailed on the Baltimore & Ohio South Western near Blocher, Ind., on the 20th was a freight of the Cleveland, Cincinnati, Chicago & St. Louis, and the cause is unexplained. A derailed car knocked down the bridge over Big Creek and 12 empty cars fell through the bridge; but no trainman was injured. The destruction of the bridge necessitated the suspension of traffic over this line between North Vernon, Ind., and Louisville, Ky., for five days.

The train derailed near Brookville, Pa., on the 22nd was a southbound freight. Fourteen cars were ditched. One brakeman was killed and two other trainmen were injured. The derailment was due to a landslide.

The train derailed near Big Flats, N. Y., on the morning of the 24th was westbound passenger No. 3. The derailment was due to a freight car door which had fallen on the track from a train passing in the opposite direction. The engine ran off the rails and 2,310 ft. on the ties with brakes set in emergency, the air pipe between engine and tender having been broken off by the car door. No injuries.

The train derailed at Cook's Mill, Pa., on the evening of April 26 was a southbound freight and the engine and five cars fell down a bank and lodged on the track of the Baltimore & Ohio. The fireman was killed and the engineman injured. The derailment was due to a landslide on a curve where the engineman's view was very short. Both the Pennsylvania and the Baltimore & Ohio lines were blocked about 12 hours.

The train derailed on the New York Central at Amherst, Ohio, on the 26th, was an eastbound freight. The locomotive was overturned and the engineman was killed.

The train derailed at Faber, Va., on the evening of April 27 was northbound passenger No. 36. Both of the two engines drawing the train, together with the baggage car, were thrown off. Four trainmen were injured, and a man and a woman walking along the track were killed. The derailment is believed to have been due to a loose switch.

The train involved in the accident near Bedford, Ind., on the sixth was southbound passenger No. 3. The boiler of the locomotive exploded and two trainmen were injured. The cause of the explosion was low water.

Electric Car Accident.—In Seattle, Wash., on the 11th, a street car was knocked off a trestle by a freight train and was partly buried in mud; one passenger was killed and 20 or more injured.

CENTRAL DOMINICAN RAILWAY.—On March 30, an agreement was concluded between the Dominican Government and the United States whereby the Central Dominican Railway, connecting Moca and Santiago with Puerto Plata, is to be handed over to the absolute control of an American engineer. The money required for reconstruction and purchase of rolling-stock will be borrowed from the fund set aside for public works, and is to be repaid out of the profits of the railway. The agreement is renewable every two years, but the Dominican Government is unable to resume control until it has repaid the advances from the public works fund.

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

General News Department

Strikes of varying degrees of importance have been reported at the freight stations in New York City during the past week, but business appears to have been kept moving, though with many delays. The Delaware, Lackawanna & Western advanced the pay of its freight handlers from 22 cents an hour to 25 cents.

The movement of freight through the canals at Sault Ste. Marie in the month of May amounted to 12,293,476 tons; number of vessels, 3,215; registered tonnage, 9,418,454 tons, net. Eastbound freight totalled 9,752,488 tons and westbound 2,540,988 tons. The principal commodities were wheat and other grain and iron ore.

The Wellsville & Buffalo Railroad, the northern section of what was the Buffalo & Susquehanna Railway, is now operated under its own executive staff, with F. E. Dewey as general manager. The sale of this road, separating it from the Buffalo & Susquehanna, took place last December, but up to June 1 it was operated under the former management.

The Illinois Central, as a result of a conference with the South Shore Safety League, is preparing to protect the grade crossings along its South Chicago branch in the interests of safety for school children who are obliged to cross its tracks. At 12 crossings gates will be put in and at others "wig-wag" automatic bells and lights will be installed. The expenditure will be about $30,000.

A man giving the name of F. C. Ketter of Columbus, Ohio, was arrested in Chicago on June 5, following a telegram to the federal authorities from E. P. Ripley, president of the Santa Fe, to the effect that Ketter had forged to a telegram the name of P. E. Carr, president of the Coahuila & Zacatecas of Mexico, asking for a pass from Chicago to El Paso, Tex. The pass was issued, but discovery soon after was made. Fifty passes and 57 bank books were found in the man's baggage.

"It is the duty of a railroad to the public it serves to protect its patrons by discharging men who use intoxicants," Judge A. Van Valkenburgh declared from the bench of the United States District Court at Kansas City in instructing the jury hearing a damage suit for $34,000 brought by a discharged employee against the Chicago, Milwaukee & St. Paul. The employee, a conductor, had been dismissed from the service three years ago, it was charged, when he was found to be using intoxicants.

Test of Julian-Beggs Stop

The Julian-Beggs Signal Company recently conducted a number of tests of its automatic stop and train control system on the Queen & Crescent line between Erlanger, Ky., and Crittenden. A train of an engine and three cars was run over the 20-mile section where the apparatus is installed, making tests of the apparatus under varying conditions, and all with entirely satisfactory results. The tests were witnessed by about 30 railroad officers, both operating and engineering, including seven signal engineers. The Julian Beggs apparatus was the subject of an illustrated descriptive article in the Daily Edition of the *Railway Age Gazette* of March 21 last.

Bonuses for All Employees

On Sunday last, at the invitation of the officers of the road, about 1,500 employees of the Bangor & Aroostook gathered at a "good-will meeting" at Houlton, Me., special trains having been run from all of the divisions of the road. On the arrival of the trains the employees were entertained by the company at luncheon in the paint-shop, which had been cleared for the purpose; and after having a couple of hours to themselves, the meeting was opened at 4 o'clock. In the meantime those employees who belong to brotherhoods—the brakemen and the telegraphers—had held meetings of their organizations, while the others were entertained by a band concert. At the general meeting the employees were surprised by an announcement from President Percy R. Todd, in a short speech, that cash bonuses were to be at once paid to all employees receiving less than $2,000 a year, the amount to be 4 per cent on the wages received by each man during the 12 months ending June 1, 1916. Addresses were made by other officers of the company.

The enginemen and firemen of the Bangor & Aroostook are non-union, practically the whole force having been recruited since January, 1913, when the brotherhood men declared a strike (which, theoretically, is still on); and the clerks and shopmen employed by the road are also non-union; but most of the conductors, brakemen, station men and section men belong to unions.

It is said that none of the employees of this road are taking part in the present movement for an eight-hour day. President Todd in his address took occasion to repeat his former declaration that the company is not opposed to labor unions.

Acts of Massachusetts Legislature

The Massachusetts Legislature ended its session June 3. It passed a bill authorizing the Central Vermont to acquire the Southern New England and another to allow the Central Vermont to sell its interest in the New London Northern. It passed a bill authorizing the Public Service Commission to investigate the cause of freight delays in Boston, this being the only recommendation of the special Boston Terminal Commission to be enacted into law. The Southern New England was given until December 31, 1918, in which to complete and open its railroad in Massachusetts, and the Boston & Eastern Electric Railroad Company was given an extension of time until April 1, 1918, in which to construct and operate its road.

The legislature passed an act authorizing the Union Freight Railroad Company (Boston) to extend its tracks over the Northern avenue bridge so as to connect with the New Haven Railroad, but Governor McCall vetoed the bill and his veto was sustained.

The Golf Tournament at Atlantic City

The M. C. B. and M. M. conventions' third annual golf tournament, open to members of the A. R. M. M. A., M. C. B. A., R. S. M. A., and official registered guests, will be held on June 18, at the Atlantic City Country Club, Northfield, N. J.

The tournament will consist of two contests, run simultaneously; one an 18-hole Medal Play Handicap, the other an 18-hole Blind Score Event. Trophies will be presented to the four low men in each contest, together with such other prizes as the committee may select.

The winning scores in the Blind Handicap Event will be between 70 and 76 inclusive. Each participant in this tournament has the privilege of nominating his own handicap prior to starting, with the view of securing a net score from 70 to 76 inclusive. The net scores under or over 70 to 76 respectively will be disqualified in this event only.

In case of ties in either the 18-hole Medal Play Handicap or in the 18-hole Blind Score Event, additional rounds will be played by those who have tied either on Monday, June 19, or Tuesday, June 20, at the Atlantic City Country Club.

Members of the associations who desire to play in the golf tournaments will aid the golf committee greatly if they will enter their names with the golf committee prior to June 18, although entries will be received by the committee at the first tee on the morning of the tournament.

The Atlantic City Country Club tenders the use of its club house and grounds to members of the associations upon the payment of usual greens fee. There is no entrance fee for participating in the golf tournament.

Sight-seeing buses between Atlantic City and the Country Club have been provided for the day of the tournament; they will leave the entrance to the Marlborough Hotel at 7:30, 8 and 8:30 a. m.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH, 1916

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
Alabama & Vicksburg	143	$97,695	$29,613	$140,322	$21,158	$32,055	$3,590	$47,460	$1.934	$5,410	$111,607	$28,715	$8,535	$20,180	$15,905
Alabama Great Southern	309	379,418	89,145	504,699	55,748	103,364	13,367	152,139	2,432	8,456	335,507	169,192	18,150	151,042	69,126
Ann Arbor	294	186,382	37,333	236,155	16,915	32,568	4,198	86,339	331	12,472	152,824	83,331	15,970	67,329	28,001
Arizona Eastern	378	260,315	42,160	317,510	72,753	34,271	2,923	62,305	1,402	10,407	183,546	133,964	16,200	117,750	28,416
Atchison, Topeka & Santa Fe	8,620	6,942,095	2,028,338	9,760,080	1,376,392	1,499,571	189,066	2,581,954	.....	179,437	5,817,834	3,942,245	458,977	3,481,168	984,665
Atlanta & West Point	93	71,203	35,489	121,442	13,844	27,033	6,504	35,248	1,970	4,169	88,768	32,674	6,564	25,534	5,745
Atlanta, Birmingham & Atlantic	640	216,011	35,102	271,459	43,363	49,311	14,119	100,751	22	8,858	216,425	55,034	13,100	41,934	.....
Atlantic & St. Lawrence	167	174,204	18,010	205,462	15,738	29,983	4,597	104,496	.....	5,182	159,998	45,464	11,505	33,959	10,063
Atlantic City	170	80,285	57,671	147,084	25,082	24,859	2,234	86,388	97	999	139,661	7,424	10,000	—2,593	18,310
Atlantic Coast Line	4,704	2,357,302	914,966	3,576,092	383,928	451,781	65.697	1,081,658	18,858	74,469	2,074,467	1,501,626	163,000	1,337,288	117,050
Baltimore & Ohio	4,535	7,501,479	1,106,157	9,269,711	1,232,312	2,136,113	156,182	3,308,146	52,427	200,130	7,082,167	2,187,544	331,908	1,845,858	—494,533
Baltimore & Ohio Chicago Terminal	79	.....	537	160,691	11,929	29,325	863	79,298	1,357	9,808	131,636	29,055	22,689	6,366	—19,248
Baltimore, Chesapeake & Atlantic	88	49,331	21,401	73.764	4,782	12,562	1,002	40,386	.....	3,994	62,725	11,039	2,243	8,796	5,640
Bangor & Aroostook	632	338,189	51,747	406,814	48,221	54,640	2,776	112,107	3,285	12,085	233,115	173,699	13,400	160,299	—44,972
Belt Ry. Co. of Chicago	31	.....	.....	255,762	12,121	39,968	1,561	115,968	.....	6,473	176,090	79,672	15,195	64,477	—43,596
Bessemer & Lake Erie	205	506,145	26,633	551,458	60,926	165,147	8,986	180,552	.....	14,031	410,817	140,641	22,017	118,621	150,860
Bingham & Garfield	27	173,518	3,844	178,471	16,365	16,590	1,025	22,577	173	2,510	59,239	119,232	4,286	114,946	47,329
Boston & Maine	2,302	2,765,916	1,093,752	4,297,378	425,152	587,754	31,867	2,034,038	16,254	113,208	3,208,273	1,089,104	159,884	929,221	336,476
Buffalo & Susquehanna R. R. Corporation	253	129,210	6,080	137,227	19,925	42,351	1,142	42,810	.....	5,210	111,438	25,790	2,600	23,190	19,658
Buffalo, Rochester & Pittsburgh	586	876,973	84,226	999,126	104,176	231,973	12,094	364,186	1,325	20,852	734,607	264,519	20,000	244,518	87,132
Canadian Pacific Lines in Maine	233	270,204	16,871	300,788	11,101	35,894	5,248	114,776	.....	3,635	170,653	130,135	.....	130,135	76,200
Carolina, Clinchfield & Ohio	283	252.776	17,120	275,408	28,337	39,808	15,701	51,375	.....	9,651	143,802	131,606	9,500	122,106	68,229
Carolina, Clinchfield & Ohio of S. C.	18	14,213	1,076	15,704	2,608	101	2,294	3,032	.....	943	8,979	6,726	500	6,226	2,029
Central of Georgia	1,924	792,891	220,820	1,128,515	155,908	204,867	34,147	349,977	2,281	36,914	782,923	345,593	52,422	291,924	—31,691
Central New England	304	265,409	29,158	314,718	36,496	39,895	1,148	153,472	.....	4,353	235,354	79,363	17,800	61,411	—95,905
Central of New Jersey	681	2,180,180	412,126	2,786,819	238,370	444,389	27,517	1,131,301	13,641	57,427	1,912,646	874,173	142,964	731,209	210,042
Central Vermont	411	278,277	64,665	372,285	21,155	59,220	8,383	189,297	2,572	7,651	288,278	84,007	15,640	68,366	10,637
Charleston & Western Carolina	343	155.281	27,708	191,944	27,259	29,007	1.996	56,968	.....	4,598	119,789	72,155	5,000	66,948	7,378
Chesapeake & Ohio Lines	2,374	3,568,218	456,530	4,297,951	452,692	1,050,744	55,066	1,267,200	28,571	93,867	2,946,626	1,351,325	130,000	1,221,228	338,804
Chicago & Alton	1,052	1,065,836	296,463	1,469,693	130,609	316,989	32,463	476,994	10,016	31,657	998,405	471,288	51,883	419,243	256,373
Chicago & Eastern Illinois	1,136	1,110,030	230,433	1,449,690	154,031	342,903	28,474	516,296	9,602	35,394	1,084,896	364,794	64,550	299,474	74,045
Chicago & Erie	270	570,244	41,905	658,645	52,928	71,256	17,789	258,188	1,677	15,394	416,916	241,729	22,230	219,499	70,828
Chicago & North Western	8,108	5,305,459	1,653,485	7,725,542	673,217	1,240,000	112,583	2,871,997	54,673	160,797	5,105,430	2,620,112	405,000	2,214,339	742,143
Chicago, Burlington & Quincy	9,369	6,557,745	1,585,098	8,946,622	925,567	1,298,847	132,112	2,574,742	93,639	167,909	5,192,816	3,753,806	399,878	3,353,929	1,717,166
Chicago Great Western	1,496	1,005,956	259,211	1,376,535	140,083	227,507	44,565	485,013	8,809	31,984	937,792	438,743	45,744	391,733	145,599
Chicago, Indianapolis & Louisville	622	482,048	144,716	675,888	66,429	108,421	21,547	224,648	673	17,716	439,203	236,685	36,306	200,377	30,237
Chicago Junction	24	.....	.....	210,224	22,303	19,631	1,180	120,544	.....	6,198	169,857	40,367	2,427	37,940	6,653
Chicago, Milwaukee & St. Paul	10,210	6,580,947	1,447,732	8,876,705	706,406	1,399,593	145,727	3,184,810	55,314	159,148	5,597,798	3,278,907	420,074	2,858,406	384,653
Chicago, Peoria & St. Louis	255	122,207	22,763	152,076	18,909	29,768	5,685	62,549	.....	5,394	122,305	29,771	6,000	23,771	14,377
Chicago, Rock Island & Gulf	477	185,385	146,258	252,199	37,714	33,431	9,873	97,931	1,111	8,159	188,118	64,081	10,000	54,025	4,490
Chicago, Rock Island & Pacific	7,559	4,368,029	1,372,307	6,216,410	669,101	1,015,650	135,896	2,149,029	38,260	144,981	4,147,083	2,069,328	294,370	1,772,336	631,136
Chicago, St. Paul, Minn. & Omaha	1,753	1,204,521	408,808	1,727,297	126,141	206,806	32,904	704,562	14,969	41,939	1,127,135	600,163	86,205	513,456	93,219
Chicago, Terre Haute & Southeastern	373	238,219	16,630	260,813	32,101	56,488	4,004	76,676	1,271	8,295	178,808	82,006	10,417	71,589	31,700
Cincinnati, Hamilton & Dayton	622	571,460	78,161	721,911	122,513	170,735	13,031	267,644	2,955	18,254	591,593	130,318	28,792	100,747	113,622
Cincinnati, Indianapolis & Western	322	126.834	38,487	180,973	19,306	22,822	5,725	80,922	385	7,415	136,527	44,446	9,656	34,790	.....
Cincinnati, New Orleans & Texas Pacific	337	851,922	146,537	1,051,958	120,477	213,332	25,104	344,897	6,592	21,625	732,028	319,930	32,000	287,930	73,946
Cincinnati Northern	246	144,738	16,178	165,923	23,743	28,420	3,517	51,863	.....	2,576	110,121	55,802	6,000	49,802	35,253
Cleveland, Cincinnati, Chic. & St. Louis	2,385	2,806,536	687,834	3,826,727	328,379	751,368	87,473	1,289,014	23,502	69,475	2,547,448	1,279,279	135,000	1,143,834	602,924
Colorado & Southern	1,102	539,459	96,956	689,622	84,847	143,126	10,365	200,176	3,036	21,221	462,771	226,851	34,400	192,428	68,455
Colorado Midland	338	87,220	7,639	106,710	18,256	27,104	7,311	47,649	676	5,123	106,118	592	6,800	—6,208	5,661
Cripple Creek & Colorado Springs	87	102,446	13,805	117,892	6,689	14,081	2,672	27,347	.....	3,413	54,202	63,689	4,393	59,296	.....
Cumberland Valley	164	245,912	51.277	309,771	23,121	27,136	3,667	87,345	1,015	10,631	151,912	157,859	5,960	151,900	71,782
Delaware & Hudson Co.—R. R. Dept	886	1,727,539	189,047	2,034,635	185,120	405,645	23,923	804,461	16,415	72,277	1,507,535	527,100	58,650	468,450	—201,040
Delaware, Lackawanna & Western	955	3,208,298	597,879	4,234,295	251,754	617,969	71,260	1,435,800	27,272	83,204	2,485,249	1,749,046	202,500	1,545,266	734,472
Denver & Rio Grande	2,566	1,496,762	273,151	1,894,603	132,215	355,906	42,244	510,216	21,138	49,857	1,111,576	783,027	90,000	692,967	238,165
Denver & Salt Lake	255	82,577	18,928	108,496	17,752	27,967	1,833	44,402	.....	5,845	97,799	10,697	7,007	3,690	—18,805
Detroit & Mackinac	393	73,626	21,081	100,814	10,335	18,075	2,211	35,280	.....	2,754	68,655	32,159	8,000	24,159	—2,641
Detroit & Toledo Shore Line	81	186,071	.....	186,797	7,972	9,810	1,686	45,647	.....	2,753	67,868	118,929	10,596	108,333	55,637
Detroit, Grand Haven & Milwaukee	191	180,000	36,000	247,962	26,796	43,880	5,127	131,849	569	5,051	213,273	34,689	3,770	30,748	25,075
Detroit, Toledo & Ironton	441	166,091	12,336	189,935	18,296	20,976	4,449	97,351	.....	7,314	148,387	41,548	6,000	35,548	28,528
Duluth & Iron Range	288	83,755	24,249	115,563	48,551	73,148	1,212	74,125	910	8,749	202,993	—87,430	7,682	—95,113	—44,821
Duluth, Missabe & Northern	399	118,562	28,118	162,932	103,416	110,662	3,245	86,991	1,061	11,287	316,707	—153,775	12,345	—166,120	—82,136
Duluth, South Shore & Atlantic	630	189,516	60,195	267,476	38,169	40,482	6,890	105,888	3,523	8,182	203,135	64,341	19,000	45,325	6,563
Duluth, Winnipeg & Pacific	187	222,258	20,508	247,032	10,713	21,383	1,922	102,621	644	8,650	145,933	101,100	12,352	88,748	45,167
El Paso & Southwestern Co.	1,027	777,358	134,081	967,084	99,092	121,258	18,617	249,941	6,781	32,940	528,629	438,455	37,329	401,123	169,193
Elgin, Joliet & Eastern	795	1,159,051	6	1,237,726	85,327	247,432	6.856	356,153	.....	19,009	714,646	523,081	40,700	482,381	211,253
Erie	1,988	3,781,865	664,973	4,966,643	408,625	1,180,565	90,554	2,110,537	35,491	113,212	3,937,123	1,029,519	194,147	834,916	—140,224
Florida East Coast	745	497,454	379,197	990,047	66,884	76,410	8,228	223,472	4,930	22,062	398,968	591,079	33,882	557,146	224,924
Ft. Worth & Denver City	454	343,898	108,645	478,749	59,401	80,172	5.655	133,296	2,546	15,664	296,734	182,015	15,217	166,798	93,516
Galveston, Harrisburg & San Antonio	1,351	831,915	260,110	1,151,456	216,429	185,005	29,772	397,809	10,061	34,021	851,387	300,069	48,502	251,052	114,962
Galveston Wharf	13	.....	.....	112,803	1,289	2,729	332	33,371	20,626	382	58,729	54,074	12,000	42,074	—23,299
Georgia	307	198,331	59,725	283,088	23,237	38,384	13,173	109,040	90	7,862	191,381	91,707	4,865	86,791	29,869
Georgia, Southern & Florida	395	146,055	47,953	219,437	23,708	42,013	6,816	85,787	967	9,130	168,403	51,034	12,138	38,798	19,738

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH, 1916—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
Grand Rapids & Indiana	575	$323,362	$108,931	$467,103	$60,704	$92,164	$10,567	$201,644	.....	$14,016	$379,096	$88,007	$23,929	$64,078	—$3,581
Grand Trunk Western	347	565,000	95,000	710,433	52,385	122,377	15,118	270,377	$4,541	14,114	478,911	231,522	32,970	198,535	166,380
Great Northern	8,102	4,810,998	989,071	6,377,978	742,951	891,690	90,166	2,072,572	64,218	107,150	3,950,058	2,427,920	404,373	2,023,405	468,794
Gulf & Ship Island	308	132,716	26,257	167,909	13,256	22,753	3,134	44,680	348	11,079	95,251	72,659	6,957	65,640	21,736
Gulf, Colorado & Santa Fe	1,938	985,959	211,554	1,280,590	211,514	195,953	41,585	510,568	.....	45,381	997,285	283,305	54,920	227,702	—393
Hocking Valley	350	447,042	64,742	539,571	55,933	178,276	8,531	169,064	.....	14,203	426,008	113,563	43,200	70,003	—6,800
Houston, East & West Texas	191	106,679	27,297	142,847	28,600	20,364	2,227	46,303	807	3,289	101,553	41,294	5,108	35,662	2,549
Houston & Texas Central	895	362,856	105,252	511,890	86,961	74,337	17,165	198,538	5,891	19,897	402,406	109,485	30,517	78,536	30,743
Illinois Central	4,767	4,344,463	1,113,944	5,943,011	724,934	1,431,398	109,716	1,920,008	35,303	148,716	4,364,058	1,578,953	365,400	1,210,461	249,632
Indiana Harbor Belt	110	.....	.....	407,405	30,354	41,757	2,660	156,567	.....	8,266	239,604	167,800	7,680	160,115	65,078
International & Great Northern	1,160	581,897	134,124	780,887	121,470	142,928	21,456	337,092	2,452	29,097	636,359	144,529	39,883	104,475	155,726
Kanawha & Michigan	177	275,008	28,266	310,607	34,400	73,209	2,680	75,723	3	6,757	192,771	117,836	14,000	103,836	83,312
Kansas City, Mexico & Orient	738	173,695	27,430	212,220	47,151	47,707	8,518	87,851	.....	9,756	200,982	11,238	11,004	234	14,560
Kansas City Southern	837	720,779	119,428	922,754	90,514	121,649	25,725	285,849	.....	33,533	554,246	368,508	48,376	319,570	52,526
Lake Erie & Western	900	490,653	59,399	577,892	61,263	88,603	11,658	193,171	.....	11,786	366,482	211,410	22,000	189,395	99,870
Lehigh & Hudson River	97	126,357	3,593	143,756	14,356	23,457	1,483	54,543	.....	3,760	91,599	46,157	5,000	41,157	—7,185
Lehigh & New England	296	266,214	1,203	283,792	32,616	33,695	2,335	79,268	.....	5,679	153,580	130,212	8,820	121,392	58,568
Lehigh Valley	1,442	3,330,302	285,196	3,889,169	375,246	671,680	77,286	1,532,152	11,434	83,047	2,749,188	1,139,981	140,000	999,963	239,528
Long Island	397	375,869	49,324	1,003,464	146,999	134,103	9,592	487,645	6,199	34,476	816,885	186,579	71,905	114,674	16,923
Louisiana & Arkansas	279	121,096	13,761	139,005	26,665	21,528	3,256	36,460	.....	4,964	92,872	46,133	7,942	38,191	—8,153
Louisiana Ry. & Navigation Co	351	129,175	25,306	164,978	22,524	30,967	6,057	64,306	.....	4,856	128,710	36,268	9,500	26,767	17,854
Louisiana Western	208	150,903	51,366	218,355	26,447	32,040	7,292	53,141	1,846	6,425	127,177	91,178	9,983	81,149	35,090
Louisville & Nashville	5,038	4,075,986	957,293	5,404,961	675,297	922,778	122,469	1,582,174	22,369	121,624	3,491,246	1,913,721	195,931	1,717,368	885,542
Louisville, Henderson & St. Louis	200	104,186	31,634	143,880	30,162	15,274	4,526	43,808	.....	3,357	97,127	46,726	3,800	42,946	21,774
Maine Central	1,220	718,429	240,199	1,031,343	123,765	147,230	10,154	400,210	1,270	27,124	709,697	321,646	49,603	272,033	26,140
Michigan Central	1,803	2,569,343	715,487	3,705,548	380,141	586,058	64,636	1,329,458	51,799	68,294	2,480,388	1,225,161	140,000	1,084,776	589,803
Midland Valley	380	115,100	37,666	160,413	27,612	41,134	2,682	50,218	.....	6,600	128,246	32,167	7,549	24,600	15,535
Minneapolis & St. Louis	1,646	746,744	165,273	959,635	93,382	134,709	17,274	368,651	90	21,200	635,307	324,328	38,659	285,373	59,784
Minneapolis, St. Paul & Sault Ste. Marie	4,229	2,332,266	447,794	2,953,233	187,324	356,874	45,963	885,632	13,028	56,917	1,542,850	1,410,384	118,703	1,291,680	547,775
Missouri & North Arkansas	365	73,052	26,700	107,144	30,432	22,222	3,414	39,179	.....	5,715	100,963	6,181	5,800	394	24,881
Missouri, Kansas & Texas System	3,865	1,880,235	623,709	2,736,090	704,381	610,725	60,860	1,036,275	18,713	92,763	2,523,604	212,486	132,578	79,470	—701,795
Missouri, Oklahoma & Gulf	334	96,706	20,890	122,893	28,999	30,787	4,183	50,255	117	7,724	122,066	827	8,272	—7,452	13,822
Missouri, Oklahoma & Gulf Ry. of Texas	125	21,849	422	22,503	4,341	3,679	2,056	11,709	.....	1,700	23,484	—981	281	—1,262	—75
Missouri Pacific	3,931	2,177,444	359,120	2,739,535	391,839	647,174	76,581	921,130	6,120	60,266	2,100,864	638,671	108,062	527,647	292,994
Mobile & Ohio	1,122	872,019	94,220	1,019,998	95,854	205,724	32,861	347,179	2,390	30,530	714,537	305,461	35,722	269,676	6,338
Monongahela	108	175,952	8,666	187,209	27,649	14,912	1,115	41,007	.....	4,125	88,809	98,400	4,000	94,400	.....
Morgan's La. & Texas R. R. & S. S. Co.	405	293,955	88,097	408,832	63,014	71,110	12,156	136,763	2,297	12,002	297,062	111,770	21,667	89,648	10,282
Nashville, Chattanooga & St. Louis	1,231	835,390	204,904	1,130,021	165,862	213,812	49,990	416,569	11,682	39,064	893,109	236,912	27,000	209,737	99,478
Nevada Northern	165	150,395	12,443	167,482	16,405	15,881	536	29,644	105	4,572	67,142	100,340	5,617	94,724	47,878
New Orleans & North Eastern	204	249,480	57,338	334,664	35,706	58,407	10,580	101,533	5,530	11,378	223,134	111,531	15,500	96,031	43,434
New Orleans, Mobile & Chicago	402	150,246	24,024	181,624	30,823	27,835	3,463	57,100	—9	7,632	126,843	54,782	6,486	48,294	13,235
New Orleans Great Northern	285	127,262	27,932	172,760	16,828	17,669	2,646	46,722	185	6,717	90,767	81,993	3,371	78,632	41,205
New Orleans, Texas & Mexico	286	107,560	18,334	135,808	24,783	21,026	3,707	53,463	.....	9,447	112,425	23,383	1,500	21,866	—3,613
New York Central Railroad	6,093	12,265,337	3,563,284	18,420,898	1,784,232	3,236,454	244,367	6,317,502	223,303	390,592	12,196,450	6,224,448	808,582	5,414,817	2,444,880
New York, Chicago & St. Louis	570	1,136,933	81,030	1,262,633	98,007	201,404	42,513	524,901	3,921	20,546	891,293	371,340	40,000	330,847	209,539
New York, Ontario & Western	568	471,569	68,487	638,681	68,420	131,699	7,419	325,076	.....	16,892	549,506	89,174	21,000	68,141	—46,469
New York, New Haven & Hartford	2,005	2,953,913	2,265,009	6,098,626	697,118	877,087	29,525	2,676,437	78,791	149,962	4,507,662	1,590,964	252,000	1,338,121	—240,024
New York, Philadelphia & Norfolk	112	338,343	31,048	393,272	30,028	67,932	3,215	145,774	3,769	10,552	260,941	132,331	10,000	122,314	78,226
New York, Susquehanna & Western	140	270,708	53,168	362,555	21,886	38,678	1,818	204,357	.....	5,691	271,397	91,158	14,100	77,119	—1,836
Norfolk Southern	908	340,561	72,970	435,205	38,862	62,786	7,442	141,905	62	17,768	268,825	166,380	12,855	153,453	63,742
Norfolk & Western	2,086	4,429,025	439,976	5,056,887	485,478	872,658	59,379	1,264,310	8,671	76,223	2,729,426	2,327,461	175,000	2,152,347	1,073,853
Northern Pacific	6,510	4,997,661	981,748	6,470,535	610,373	672,263	93,568	1,966,538	75,447	93,028	3,483,479	2,987,056	391,959	2,594,727	892,901
Northwestern Pacific	507	130,898	124,205	291,601	53,826	44,898	5,087	115,052	817	8,288	226,493	65,108	16,944	48,164	34,401
Oahu Railway & Land Co	114	75,101	19,773	102,715	10,072	9,691	901	24,864	.....	4,211	49,739	52,976	8,500	44,476	—1,378
Oregon Short Line	2,259	1,591,854	351,258	2,077,634	229,805	253,950	31,197	477,524	25,671	62,340	1,080,485	997,149	131,600	865,381	408,695
Oregon-Washington R. R. & Nav. Co.	2,053	1,036,713	315,624	1,481,884	269,315	172,017	41,012	503,394	21,635	67,890	1,067,138	414,744	94,978	319,674	37,692
Panhandle & Santa Fe	670	377,467	72,548	469,738	94,942	60,789	4,021	116,709	.....	11,650	287,386	182,352	10,573	171,632	111,549
Pennsylvania Company	1,758	4,381,190	859,736	5,703,737	730,035	1,038,098	83,294	1,928,290	32,968	147,657	3,957,376	1,746,361	284,797	1,461,387	802,598
Pennsylvania Railroad	4,541	13,935,733	3,271,496	18,907,092	2,456,360	3,893,323	192,350	6,779,756	257,416	437,098	14,016,303	4,890,789	674,736	4,213,472	2,052,240
Pere Marquette	2,248	1,399,003	292,764	1,855,564	109,698	421,590	34,589	640,406	3,482	37,761	1,247,390	608,173	48,196	559,019	269,356
Philadelphia & Reading	1,120	4,509,277	523,766	5,302,460	278,984	730,226	44,413	1,755,562	13,151	82,357	2,902,966	2,399,494	100,148	2,299,132	1,017,804
Philadelphia, Baltimore & Washington	717	1,039,965	768,172	2,007,298	254,724	364,521	26,573	771,056	136	50,223	1,467,234	540,064	56,694	483,145	313,001
Pittsburgh & Lake Erie	225	1,778,884	138,036	2,029,243	171,069	278,269	11,614	464,940	3,699	31,502	961,093	1,068,151	58,700	1,009,451	634,318
Pittsburgh, Cincinnati, Chic. & St. Louis	1,489	3,060,988	712,315	4,187,157	530,347	873,748	73,813	1,461,872	25,839	102,256	3,067,649	1,119,508	175,017	944,219	346,437
Pittsburgh, Shawmut & Northern	294	186,177	8,993	198,385	26,038	47,956	1,342	71,005	.....	4,150	150,491	47,892	1,863	46,030	15,800
Port Reading	21	116,376	.....	133,680	5,030	12,701	38	101,839	.....	140	119,748	13,932	10,000	3,932	—73,938
Richmond, Fredericksburg & Potomac	88	161,228	118,071	321,352	27,931	32,197	2,966	96,106	5,293	7,530	172,025	149,327	9,226	140,097	43,629
Rutland	468	199,508	91,409	332,001	34,607	62,922	9,052	122,242	934	7,002	236,759	95,242	17,101	78,134	31,983
St. Joseph & Grand Island	258	120,838	24,658	153,179	26,716	25,205	4,510	53,022	.....	4,967	114,420	38,759	7,962	30,739	34,117
St. Louis & San Francisco	4,758	2,892,640	879,206	4,051,278	596,722	771,413	63,283	1,324,100	.....	92,469	2,825,331	1,225,947	177,132	1,047,519	3,929
St. Louis, Brownsville & Mexico	548	135,483	58,498	209,805	47,313	37,193	6,161	72,226	.....	10,042	168,167	41,639	8,000	33,528	—24,285
St. Louis, Iron Mountain & Southern	3,362	2,062,080	468,967	2,737,957	640,542	583,256	66,447	781,695	10,805	62,099	2,139,815	598,142	115,851	480,646	—156,403
St. Louis Merchants' Bridge Terminal	9	.....	319	210,188	29,703	12,505	770	94,010	.....	6,592	143,581	66,607	7,623	58,985	15,168

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH, 1916—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
St. Louis, San Francisco & Texas	244	$60,659	$22,437	$91,983	$19,553	$16,022	$1,959	$37,937	.....	$4,809	$80,280	$11,704	$1,547	$10,143	$29,855
St. Louis Southwestern	943	601,610	97,947	742,129	68,012	119,444	31,143	176,172	$2,623	24,796	421,224	320,904	29,761	290,940	120,444
St. Louis Southwestern of Texas	811	244,175	61,183	337,938	85,114	83,703	17,294	161,154	1,370	18,729	358,438	—20,500	17,157	—37,708	—2,754
San Antonio & Aransas Pass	724	174,643	61,748	258,151	66,336	51,899	6,426	144,034	.....	12,333	280,610	—22,460	11,000	—33,586	20,156
San Pedro, Los Angeles & Salt Lake	1,154	667,933	237,981	997,126	97,483	139,713	31,124	268,616	18,081	17,209	572,032	425,094	44,829	380,229	87,130
Seaboard	3,449	1,732,798	463,388	2,449,736	250,282	312,459	68,280	788,744	20,133	63,284	1,503,182	946,554	101,250	844,872	.....
Southern	7,022	4,420,995	1,249,577	6,284,803	714,723	1,036,739	165,834	2,017,404	37,233	170,277	4,102,357	2,182,446	254,446	1,926,391	673,119
Southern Pacific	6,951	6,410,002	2,194,975	9,511,213	997,793	1,291,358	177,854	3,007,981	140,990	235,418	5,834,134	3,677,079	419,912	3,254,227	568,018
Spokane, Portland & Seattle	555	243,287	97,809	374,664	59,468	41,682	7,564	100,715	3,374	15,758	228,312	146,352	57,445	88,867	59,464
Staten Island Rapid Transit Co	11	49,944	22,569	100,114	9,683	7,245	682	51,691	.....	1,972	71,273	28,840	5,500	23,340	—12,524
Tennessee Central	294	95,999	26,333	129,227	24,823	20,534	5,386	49,756	.....	7,152	107,644	21,584	4,682	16,873	3,312
Terminal R. R. Ass'n of St. Louis	37	.....	330	279,106	38,101	18,577	862	87,781	.....	4,395	149,716	129,389	27,498	101,891	21,099
Texas & New Orleans	468	272,972	84,102	396,024	62,308	103,961	8,078	135,931	11,579	10,429	332,991	63,033	19,816	42,907	—72
Texas & Pacific	1,944	1,138,746	350,885	1,630,776	186,917	280,324	36,599	645,484	15,605	51,091	1,214,617	416,159	68,700	346,763	147,150
Toledo & Ohio Central	436	420,011	45,174	486,236	56,971	102,213	6,913	176,895	1,726	9,710	354,428	131,808	23,501	108,307	134,860
Toledo, Peoria & Western	248	61,778	34,918	101,800	13,901	33,533	2,757	35,842	.....	3,945	89,978	11,823	6,500	5,323	11,767
Toledo, St. Louis & Western	451	409,010	27,015	460,033	43,609	67,198	16,508	161,266	.....	8,347	296,928	163,104	17,400	145,704	43,377
Ulster & Delaware	129	31,570	10,463	59,243	—2,991	8,519	1,304	28,160	76	3,656	38,724	20,519	3,500	17,084	30,041
Union Pacific	3,622	3,897,642	790,605	5,157,648	587,030	642,067	96,109	1,274,714	71,095	125,942	2,784,318	2,373,330	210,700	2,162,238	1,136,518
Union R. R. of Baltimore	8	133,918	23,246	159,085	9,238	.....	.....	5,133	.....	1,959	16,330	142,755	5,724	137,032	35,475
Union Railroad Co. of Pennsylvania	31	.....	.....	394,073	35,518	113,298	144	180,030	.....	4,288	333,277	60,796	7,001	53,796	72,683
Vandalia	917	785,580	188,753	1,095,508	202,409	227,999	23,587	404,689	10,377	24,423	893,484	202,023	36,867	165,143	—7,577
Vicksburg, Shreveport & Pacific	171	87,012	34,573	136,478	25,483	24,331	2,969	43,795	2,013	4,894	103,484	32,994	8,180	24,814	29,306
Virginia & Southwestern	225	155,309	13,191	172,419	26,952	47,618	2,234	48,261	.....	3,986	129,052	43,368	7,517	35,851	24,918
Virginian	505	663,950	33,068	740,195	56,243	114,506	5,381	142,421	15,425	16,494	350,446	389,749	26,900	362,836	191,340
Wabash	2,519	2,350,619	479,959	3,085,110	310,354	458,122	92,937	1,121,625	14,190	62,987	2,058,947	1,026,163	90,261	934,948	598,855
Washington Southern	36	55,020	68,127	159,036	16,315	20,544	1,188	47,593	2,356	3,349	91,345	67,690	4,624	63,062	32,043
West Jersey & Seashore	358	231,233	260,016	532,405	96,632	90,021	9,848	237,180	2,316	16,220	452,216	80,189	36,358	43,545	82,381
Western Maryland	689	780,220	69,785	905,290	108,626	157,253	20,380	295,046	7,066	20,921	608,067	297,282	29,000	268,282	71,688
Western Pacific	941	496,656	68,424	600,304	75,540	59,779	19,264	199,959	8,411	17,064	380,016	220,288	30,092	190,154	118,375
Western Railway of Alabama	133	64,198	29,352	106,883	19,538	21,621	6,367	32,598	1,795	4,217	86,136	20,746	5,341	14,863	—6,662
Wheeling & Lake Erie	512	643,901	47,313	749,067	80,242	131,842	9,039	235,735	1,630	14,626	473,114	275,954	39,231	236,723	193,061
Yazoo & Mississippi Valley	1,382	815,814	183,035	1,058,522	158,090	178,733	20,051	365,971	1,706	30,388	754,673	303,849	52,000	251,502	21,277

NINE MONTHS OF FISCAL YEAR 1916

Alabama & Vicksburg	143	$840,127	$310,950	$1,260,837	$155,936	$269,646	$33,858	$428,831	$18,784	$49,173	$956,205	$304,632	$79,260	$225,372	$167,532
Alabama Great Southern	309	2,965,820	837,857	4,101,499	382,910	964,849	117,293	1,206,388	26,995	78,795	2,775,486	1,326,014	147,255	1,178,669	513,649
Ann Arbor	294	1,449,175	410,791	1,983,187	174,651	288,500	42,084	719,854	4,136	98,713	1,327,938	655,249	121,940	532,826	153,653
Arizona Eastern	378	1,864,116	308,853	2,311,217	398,002	234,541	21,154	505,615	11,032	94,519	1,262,630	1,048,586	167,565	880,949	457,912
Atchison, Topeka & Santa Fe	8,620	54,351,516	21,098,503	82,597,632	11,135,162	12,617,745	1,776,014	22,303,708	.....	1,707,043	49,390,708	33,206,924	3,970,665	29,214,418	6,322,024
Atlanta & West Point	93	546,410	346,395	1,027,175	122,614	200,049	54,051	298,638	18,234	40,058	733,481	293,695	54,724	234,423	27,790
Atlanta, Birmingham & Atlantic	640	592,524	109,904	758,982	120,259	140,379	41,312	291,662	79	26,684	620,375	138,607	39,300	99,307	.....
Atlantic & St. Lawrence	167	1,107,007	205,954	1,419,387	193,907	219,344	35,552	641,622	.....	38,931	1,129,357	290,030	103,545	186,473	12,931
Atlantic City	170	672,826	1,059,997	1,827,433	294,398	175,938	27,508	913,237	894	13,382	1,425,353	402,081	90,000	311,891	139,321
Atlantic Coast Line	4,704	17,077,196	6,291,215	25,407,450	3,288,124	4,099,407	528,810	8,339,873	94,626	654,232	16,987,486	8,419,964	1,346,000	7,062,296	1,955,234
Baltimore & Ohio	4,535	65,090,709	11,017,527	82,079,479	9,386,781	17,484,410	1,442,417	27,096,818	483,169	1,818,333	57,704,418	24,375,061	2,664,021	21,682,770	5,114,823
Baltimore & Ohio Chicago Terminal	79	.....	5,040	1,297,758	135,861	167,934	8,120	606,929	14,548	67,105	972,363	325,395	164,901	159,021	—13,726
Baltimore, Chesapeake & Atlantic	88	513,999	305,012	855,873	61,195	260,444	12,416	461,881	.....	29,479	825,395	30,478	20,156	10,315	—74,026
Bangor & Aroostook	632	2,104,485	490,156	2,752,277	412,817	445,999	25,088	776,056	28,148	101,738	1,789,198	963,079	115,150	847,908	—67,008
Belt Ry. Co. of Chicago	31	.....	.....	2,157,340	153,685	273,081	8,388	946,761	.....	54,106	1,436,021	721,319	107,781	613,538	—445,597
Bessemer & Lake Erie	205	7,542,314	283,152	7,981,281	605,812	1,485,010	85,836	1,829,971	.....	134,778	4,041,597	3,939,684	166,659	3,773,001	1,468,352
Bingham & Garfield	27	1,459,150	29,925	1,498,054	146,823	139,727	9,335	197,383	928	20,779	514,965	983,088	39,527	943,562	462,462
Boston & Maine	2,302	23,282,751	11,336,840	38,160,663	4,512,581	4,893,516	303,276	16,202,942	146,321	931,282	26,989,918	11,170,746	1,473,845	9,696,901	3,470,756
Buffalo & Susquehanna R. R. Corporation	253	1,226,407	60,153	1,305,045	181,535	326,333	9,765	355,023	.....	49,959	922,614	382,430	23,400	359,029	220,778
Buffalo, Rochester & Pittsburgh	586	7,766,659	849,475	8,922,734	1,255,736	2,026,638	105,412	2,831,491	10,970	196,968	6,427,215	2,495,520	180,000	2,315,426	631,440
Canadian Pacific Lines in Maine	233	1,199,401	157,541	1,443,930	178,509	177,861	46,784	584,686	.....	33,256	1,021,097	422,833	96,000	326,833	292,194
Carolina, Clinchfield & Ohio	283	1,917,863	157,849	2,118,267	210,999	268,018	90,225	375,699	.....	83,977	1,019,760	1,098,507	123,500	974,898	326,661
Carolina, Clinchfield & Ohio of S. C.	18	108,457	12,110	123,931	12,151	751	16,615	22,313	.....	6,900	58,454	65,477	6,500	58,977	17,073
Central of Georgia	1,924	6,359,590	2,322,788	9,638,977	1,269,239	1,603,894	319,051	3,120,828	12,133	341,916	6,660,088	2,978,889	477,990	2,493,215	403,184
Central of New Jersey	681	18,823,159	4,603,169	24,940,937	2,006,323	4,283,807	276,362	8,727,953	120,568	518,233	15,930,550	9,010,387	1,398,201	7,611,683	1,653,364
Central New England	304	3,023,069	331,867	3,513,758	388,125	312,658	10,466	1,123,263	.....	43,688	1,877,336	1,636,422	122,200	1,514,040	643,846
Central Vermont	411	2,194,658	690,028	3,146,675	332,754	500,823	77,259	1,383,124	19,992	65,917	2,385,869	760,807	140,460	620,314	263,265
Charleston & Western Carolina	343	1,072,984	259,113	1,408,556	238,681	181,493	28,473	454,382	.....	42,547	945,199	463,357	45,000	418,024	193,709
Chesapeake & Ohio Lines	2,374	29,191,079	4,441,456	35,845,898	4,027,494	7,941,012	476,352	10,299,703	204,972	699,589	23,637,016	12,208,882	1,145,720	11,053,718	3,610,591
Chicago & Alton	1,052	8,373,151	2,917,137	12,232,317	1,363,889	2,627,636	314,666	4,123,415	87,764	272,637	8,735,217	3,497,099	402,730	3,090,302	1,086,085
Chicago & Eastern Illinois	1,136	9,719,651	2,203,699	12,926,010	1,637,914	3,056,590	225,394	4,436,485	71,196	342,085	9,747,191	3,178,818	516,950	2,657,782	473,164
Chicago & Erie	270	4,803,571	436,464	5,687,200	506,184	560,153	154,738	2,130,570	19,258	127,422	3,488,932	2,198,269	198,173	2,000,096	945,268
Chicago & North Western	8,108	44,890,035	16,100,608	67,919,667	7,915,596	10,975,211	987,305	23,963,346	481,667	1,388,230	45,541,062	27,378,605	3,485,000	18,881,428	3,618,805
Chicago, Burlington & Quincy	9,369	54,222,556	16,152,128	77,418,806	7,794,774	11,387,847	1,146,791	22,670,457	653,503	1,489,107	45,142,479	32,276,327	3,284,258	28,992,070	6,486,691
Chicago Great Western	1,496	7,997,370	2,481,507	11,440,566	1,423,011	1,907,603	404,432	4,006,024	76,728	301,851	8,107,890	3,332,675	412,300	2,913,205	612,750
Chicago, Indianapolis & Louisville	622	3,864,907	1,368,525	5,672,435	614,282	920,131	176,162	1,915,910	2,597	164,728	3,788,953	1,883,481	254,271	1,628,872	523,132
Chicago Junction	24	.....	.....	1,721,332	188,556	159,715	9,777	930,254	.....	49,108	1,337,410	383,921	30,169	353,741	127,017

REVENUES AND EXPENSES OF RAILWAYS

NINE MONTHS OF FISCAL YEAR 1916—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
Chicago, Milwaukee & St. Paul	10,210	$56,611,922	$14,061,919	$78,623,717	$7,001,929	$12,218,125	$1,350,883	$28,235,849	$568,303	$1,426,030	$49,722,552	$28,901,165	$3,965,254	$24,914,519	$6,295,176
Chicago, Peoria & St. Louis	255	1,027,684	219,425	1,319,703	190,236	255,650	50,995	532,809	.....	48,298	1,077,987	241,716	43,698	198,018	70,854
Chicago, Rock Island & Gulf	477	1,739,658	477,866	2,409,254	362,125	295,057	86,688	818,463	15,051	72,804	1,649,948	759,306	86,703	672,001	89,090
Chicago, Rock Island & Pacific	7,559	36,545,779	13,776,809	54,465,603	7,749,669	9,486,274	1,235,795	19,888,538	405,115	1,383,846	40,102,106	14,363,496	2,662,119	11,694,366	953,895
Chicago, St. Paul, Minn. & Omaha	1,753	9,714,590	3,895,604	14,695,946	1,690,112	1,841,185	267,054	5,490,864	139,099	350,742	9,764,866	4,931,080	768,712	4,159,123	410,095
Chicago, Terre Haute & Southeastern	373	1,804,884	147,260	2,000,814	243,584	392,647	35,740	585,291	9,375	76,371	1,342,981	657,833	93,750	564,052	236,837
Cincinnati, Hamilton & Dayton	622	6,097,040	1,048,411	7,961,202	1,260,522	1,618,231	148,324	2,846,600	29,738	195,924	6,084,464	1,876,738	287,709	1,586,866	971,326
*Cincinnati, Indianapolis & Western	322	504,893	158,428	727,477	64,246	107,282	20,404	335,201	1,233	28,189	555,732	171,744	38,614	133,130	.....
Cincinnati, New Orleans & Texas Pacific	337	6,306,739	1,348,877	8,119,978	817,958	1,974,877	223,685	2,281,114	49,768	185,623	5,632,892	2,487,086	284,000	2,202,664	657,399
Cincinnati Northern	246	1,140,443	161,074	1,356,277	221,900	216,021	24,960	431,320	.....	27,211	921,412	434,865	50,371	384,420	121,618
Cleveland, Cincinnati, Chic. & St. Louis	2,385	22,813,159	6,725,301	32,272,212	3,299,481	5,964,264	679,299	10,872,721	218,564	661,904	21,535,048	10,737,164	1,151,131	9,578,533	3,975,220
Colorado & Southern	1,102	5,085,489	1,033,335	6,574,732	810,582	1,273,242	86,733	1,847,114	35,830	206,162	4,259,665	2,315,067	314,400	2,000,378	567,511
Colorado Midland	338	938,652	139,668	1,174,802	186,647	281,458	64,466	498,152	9,739	49,538	1,089,999	84,803	77,410	7,394	—95,684
Cripple Creek & Colorado Springs	87	860,778	192,749	1,070,769	131,847	114,609	33,100	263,258	.....	30,781	573,595	497,174	45,448	451,725	.....
Cumberland Valley	164	1,980,230	493,188	2,598,254	258,644	253,948	36,850	778,579	8,073	79,187	1,410,342	1,187,912	53,150	1,134,760	554,182
Delaware & Hudson Co.—R. R. Dept.	886	16,042,176	2,182,482	19,252,252	1,567,071	2,992,173	235,108	6,338,673	163,171	617,465	11,894,121	7,358,130	482,508	6,873,433	1,686,281
Delaware, Lackawanna & Western	957	26,907,091	6,325,198	36,737,922	3,181,032	5,386,727	649,758	11,518,009	273,235	724,260	21,692,722	15,045,199	1,603,234	13,439,607	3,585,915
Denver & Rio Grande	2,566	13,717,196	3,776,673	18,865,720	1,931,453	3,146,579	360,099	5,049,806	343,241	451,121	11,282,299	7,583,420	817,000	6,765,086	2,007,644
Denver & Salt Lake	255	1,170,855	239,777	1,476,311	174,514	291,641	17,194	534,370	.....	42,844	1,060,452	415,858	68,471	347,226	—3,268
Detroit & Mackinac	393	551,098	232,190	844,781	91,013	145,623	17,825	298,597	892	24,101	578,052	266,730	73,450	189,980	27,911
Detroit & Toledo Shore Line	81	1,296,044	.....	1,303,950	105,530	73,166	13,729	336,231	.....	24,412	553,069	750,881	55,562	695,319	192,280
Detroit, Grand Haven & Milwaukee	191	1,600,001	445,439	2,364,493	223,663	305,816	47,919	1,104,344	6,051	39,026	1,726,819	637,673	33,930	602,991	405,916
Detroit, Toledo & Ironton	441	1,401,361	124,768	1,633,648	171,362	214,260	35,955	709,720	.....	55,417	1,186,715	446,933	51,500	395,399	388,647
Duluth & Iron Range	288	3,858,728	184,271	4,179,165	462,921	626,672	11,654	1,064,999	11,162	97,120	2,270,826	1,908,339	228,786	1,678,466	804,351
Duluth, Missabe & Northern	399	6,650,544	240,464	7,212,945	834,296	973,132	22,061	1,254,607	56,411	121,588	3,262,164	3,950,781	409,664	3,541,117	2,285,798
Duluth, South Shore & Atlantic	630	1,684,526	649,141	2,552,036	394,594	316,183	60,069	914,860	32,757	84,312	1,808,776	743,261	190,868	552,165	293,303
Duluth, Winnipeg & Pacific	187	1,040,917	169,464	1,248,755	108,052	132,463	14,914	481,166	6,104	55,520	798,219	450,536	62,513	388,023	246,031
El Paso & Southwestern Co.	1,027	5,990,074	1,205,865	7,648,008	1,051,699	1,010,362	165,418	1,919,459	58,165	264,593	4,469,570	3,178,438	350,998	2,827,135	937,846
Elgin, Joliet & Eastern	795	9,075,132	96	9,688,906	676,928	1,708,209	59,743	2,661,935	.....	199,573	5,305,720	4,383,187	346,214	4,036,783	2,117,158
Erie	1,988	36,948,889	6,834,625	48,232,415	3,637,727	7,911,430	812,670	17,053,782	303,015	1,007,873	30,661,328	17,571,087	1,522,441	16,012,754	7,502,074
Florida East Coast	745	2,804,726	1,575,884	4,998,320	584,843	569,216	84,520	1,493,843	29,168	176,605	2,912,832	2,085,489	220,848	1,864,345	686,414
Fort Worth & Denver City	454	3,127,544	1,188,065	4,543,813	519,169	723,274	57,335	1,314,021	24,033	141,066	2,778,898	1,764,915	154,179	1,610,735	481,022
Galveston, Harrisburg & San Antonio	1,351	6,717,266	2,333,948	9,500,152	1,434,681	1,334,568	269,834	3,539,193	96,124	291,592	6,929,807	2,660,345	450,941	2,203,890	973,859
Galveston Wharf	13	.....	.....	1,029,078	37,804	19,499	3,462	284,632	359,168	3,501	708,066	321,012	88,090	232,922	—343,419
Georgia	307	1,596,700	587,912	2,367,242	206,534	370,873	113,493	921,085	848	67,957	1,679,577	687,665	119,929	566,879	228,348
Georgia, Southern & Florida	395	1,115,044	513,153	1,864,564	205,201	325,353	61,468	691,737	2,322	84,472	1,370,403	494,161	99,657	393,413	209,705
Grand Rapids & Indiana	575	2,648,019	1,215,550	4,193,567	457,875	687,412	96,088	1,676,528	13,968	133,278	3,065,149	1,128,418	200,395	926,288	162,888
Grand Trunk Western	347	4,691,930	1,240,847	6,359,084	612,863	1,008,258	139,926	2,308,174	47,873	119,004	4,236,099	2,122,985	296,730	1,825,761	1,436,203
Great Northern	8,102	44,891,121	10,310,010	60,716,952	5,413,726	6,408,609	829,229	16,704,924	649,564	990,094	30,873,154	29,843,797	3,776,895	26,063,650	3,725,969
Gulf & Ship Island	308	1,089,683	263,260	1,463,938	131,152	232,463	27,065	361,071	2,600	68,168	822,519	641,419	63,308	577,776	269,540
Gulf, Colorado & Santa Fe	1,938	8,947,668	2,344,594	11,974,585	2,287,975	1,776,313	274,782	5,146,748	.....	353,814	9,796,272	2,178,314	550,753	1,623,392	—2,157,438
Hocking Valley	350	4,372,826	648,242	5,395,282	538,186	1,166,047	75,246	1,571,503	.....	128,426	3,479,409	1,915,874	354,000	1,561,422	418,119
Houston, East & West Texas	191	790,278	256,285	1,117,160	231,707	160,607	18,495	368,024	6,018	28,886	812,995	304,166	37,851	265,506	97,713
Houston & Texas Central	895	3,608,488	1,088,427	5,085,307	771,880	743,018	144,036	1,737,925	50,976	169,884	3,612,068	1,473,238	269,853	1,201,246	241,162
Illinois Central	4,767	37,648,631	10,211,089	51,791,577	7,233,635	12,416,382	941,893	16,496,282	276,899	1,307,816	38,587,878	13,203,699	2,715,900	10,469,871	1,287,957
Indiana Harbor Belt	110	.....	.....	2,980,066	299,232	276,452	24,981	1,186,101	.....	71,894	1,858,660	1,121,407	68,492	1,051,683	377,732
International & Great Northern	1,160	5,179,011	1,371,266	7,095,145	1,088,427	1,181,800	185,713	2,817,433	28,452	260,610	5,437,932	1,657,213	318,678	1,336,732	604,887
Kanawha & Michigan	177	2,372,857	276,647	2,716,541	361,064	554,421	27,665	691,463	100	60,786	1,695,499	1,021,042	120,135	900,565	424,905
Kansas City, Mexico & Orient	738	1,595,285	304,961	2,002,354	491,088	405,001	79,216	819,197	.....	91,844	1,886,347	116,007	108,175	7,811	—276,213
Kansas City Southern	837	5,994,682	1,124,733	7,839,632	870,633	898,903	249,019	2,470,542	.....	309,604	4,716,626	3,123,007	416,862	2,702,764	390,252
Lake Erie & Western	900	4,309,971	569,126	5,134,653	571,523	925,790	111,679	1,715,784	.....	112,139	3,436,915	1,697,739	208,803	1,488,341	717,627
Lehigh & Hudson River	97	1,335,306	73,332	1,544,664	159,214	205,586	13,515	504,793	.....	37,483	920,591	624,073	41,800	582,273	199,320
Lehigh & New England	296	2,460,036	10,930	2,606,115	329,721	281,439	17,002	639,623	.....	50,687	1,318,044	1,288,071	61,900	1,226,168	492,459
Lehigh Valley	1,442	29,818,755	3,166,632	35,143,212	3,768,875	6,941,881	739,239	12,565,430	111,616	667,817	24,770,516	10,372,696	1,281,500	9,089,391	1,660,499
Long Island	397	3,040,907	5,969,749	10,372,846	1,176,729	1,135,458	100,961	4,255,999	54,889	286,448	7,005,448	5,367,398	684,493	2,678,258	304,612
Louisiana & Arkansas	279	1,046,643	138,490	1,222,439	224,975	202,159	29,257	318,335	.....	37,848	812,575	409,864	68,782	340,873	—16,441
Louisiana Ry. & Navigation Co.	351	1,327,566	257,867	1,689,551	244,168	251,309	56,095	560,715	.....	45,057	1,157,344	532,207	85,500	446,570	165,469
Louisiana Western	208	1,229,349	482,601	1,833,306	234,153	292,757	63,803	484,382	16,783	55,073	1,146,821	686,485	85,072	600,880	168,609
Louisville & Nashville	5,038	33,089,312	8,520,152	44,709,062	6,198,649	8,015,096	1,102,784	13,142,394	213,602	962,521	25,529,060	15,180,001	1,728,524	13,435,812	5,840,112
Louisville, Henderson & St. Louis	200	822,594	310,094	1,197,904	272,504	152,922	45,624	362,637	.....	28,780	862,467	335,437	34,200	301,026	77,106
Maine Central	1,220	5,684,629	2,541,955	8,878,834	1,218,567	1,256,783	99,176	3,253,741	35,353	257,357	6,119,865	2,758,969	469,164	2,289,484	349,313
Michigan Central	1,803	19,383,717	7,416,398	30,310,401	3,483,229	4,636,098	557,083	10,586,796	466,642	577,358	20,307,207	10,003,194	1,213,936	8,784,444	3,758,532
Midland Valley	380	986,838	310,065	1,367,989	245,212	219,459	21,630	441,485	.....	54,517	982,303	385,686	59,186	326,019	125,169
Minneapolis & St. Louis	1,646	6,202,699	1,488,660	8,238,082	857,295	1,126,570	157,949	2,996,899	747	199,484	5,338,945	2,899,138	332,188	2,564,191	456,059
Minneapolis, St. Paul & Saulte Ste. Marie	4,229	19,805,350	4,861,808	26,543,179	2,336,012	3,087,547	471,179	7,711,661	144,405	522,809	14,249,297	12,293,881	1,185,198	11,108,684	3,808,394
Missouri & North Arkansas	365	576,136	257,295	896,482	253,839	195,553	26,534	324,177	.....	48,975	849,078	47,404	52,154	—5,337	144,651
Missouri, Kansas & Texas System	3,865	16,462,605	6,283,817	24,555,612	5,095,995	4,148,846	517,963	8,500,910	147,720	821,064	19,188,950	5,366,661	1,259,149	4,101,966	—3,079,401
Missouri, Oklahoma & Gulf	334	828,883	181,647	1,052,217	302,881	226,674	38,178	459,157	1,016	67,841	1,086,715	—34,498	55,619	—90,751	—69,523
Missouri, Oklahoma & Gulf Ry. of Texas	125	160,576	3,596	166,114	29,678	21,411	15,980	85,587	.....	12,188	164,843	1,271	1,683	—413	—16,841
Missouri Pacific	3,931	17,814,571	3,820,764	23,587,665	3,500,809	4,965,311	583,540	8,370,658	82,506	583,688	18,074,947	5,512,718	926,063	4,561,616	340,293
Mobile & Ohio	1,122	7,304,561	917,694	8,700,056	896,033	1,858,477	321,864	3,046,740	21,192	278,932	6,405,311	2,294,746	293,253	1,999,724	117,646

*Figures shown are for four months ended March 31, 1916.

REVENUES AND EXPENSES OF RAILWAYS

NINE MONTHS OF FISCAL YEAR 1916—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Monongahela	108	$1,316,281	$48,675	$1,384,955	$174,013	$115,994	$7,871	$293,741	.....	$29,918	$621,538	$763,417	$46,855	$716,562	.....
Morgan's La. & Texas R. R. & S. S. Co.	405	2,385,245	742,989	3,419,867	528,222	591,591	106,018	1,215,239	$20,826	104,802	2,565,503	854,364	197,197	655,518	$1,222
Nashville, Chattanooga & St. Louis	1,231	6,715,376	2,008,376	9,480,282	1,057,399	1,764,286	447,503	3,364,604	93,578	322,571	7,045,285	2,434,997	236,000	2,196,557	1,085,710
Nevada Northern	165	1,210,940	98,923	1,347,708	156,665	124,306	5,771	252,974	694	42,098	582,507	765,201	61,911	703,272	463,009
New Orleans & North Eastern	204	2,096,513	445,378	2,828,731	310,387	509,348	93,875	868,376	51,921	102,771	1,936,545	892,186	134,698	757,488	278,202
New Orleans, Mobile & Chicago	402	1,201,203	216,858	1,487,815	226,473	244,381	38,138	458,200	—60	62,423	1,029,554	458,261	61,041	396,210	118,883
New Orleans Great Northern	285	974,930	240,313	1,349,734	167,712	202,418	23,368	380,110	1,575	56,121	831,303	518,430	30,595	487,519	113,480
New Orleans, Texas & Mexico	286	988,974	207,116	1,264,018	259,113	202,075	35,042	427,988	.....	87,216	1,011,433	252,584	13,531	238,503	72,620
New York Central Railroad	6,093	96,030,495	35,841,219	152,950,221	14,777,599	26,745,842	2,141,960	47,756,408	2,087,819	3,317,112	96,826,739	56,123,482	6,600,216	49,508,387	.....
New York, Chicago & St. Louis	570	9,157,182	1,010.047	10,567,645	783,996	1,759,550	404,255	4,149,176	34,196	192,827	7,323,999	3,243,645	373,440	2,864,241	1,504,952
New York, Ontario & Western	568	4,563,073	1,278,203	6,793,423	832,553	1,095,403	67,511	2,612,701	.....	145,322	4,753,005	2,040,418	191,021	1,847,871	263,888
New York, New Haven & Hartford	2,005	27,329,012	21,935,448	55,726,965	6,526,530	8,115,915	323,726	20,635,464	590,587	1,291,946	37,430,429	18,296,536	2,157,000	16,134,894	3,472,809
New York, Philadelphia & Norfolk	112	2,831.208	330,364	3,395,551	304,891	661,476	42,453	1,265,591	36,176	100,633	2,410,534	985,017	99,562	884,290	439,642
New York, Susquehanna & Western	140	1,963,056	462,086	2,710,745	197,169	284,981	16,879	1,260,517	.....	52,746	1,810,625	900,121	119,557	779,942	136,110
Norfolk Southern	908	2,367,509	803,452	3,386,136	412,151	488,488	68,027	1,159,058	949	158,371	2,287,044	1,099,092	112,171	983,914	381,336
Norfolk & Western	2,086	36,566,149	4,369,821	42,346,188	4,798,119	7,503,644	509,461	10,539,186	77,875	651,323	23,860,581	18,485,606	1,540,000	16,942,897	7,819,897
Northern Pacific	6,510	41,152.519	10,351,579	56,291,402	5,987,844	5,456,079	847,868	15,696,528	740,381	837,187	29,159,576	27,131,826	3,463,722	23,664,388	6,988,373
Northwestern Pacific	507	1,275,550	1,528,471	3,151,261	516,308	368,173	46,656	1,080,803	1,470	71,453	2,069,155	1,082,106	153,973	927,806	280,809
Oahu Railway & Land Co.	114	704,317	189,678	957,191	92,116	76,420	6,365	215,238	.....	47,589	437,728	519,463	76,611	442,851	—23,321
Oregon Short Line	2,259	13,891,418	3.540.145	18,788,502	2,216.233	2,205,448	316,407	4,204,901	273,101	495,951	9,708,276	9,080.226	1,217,435	7,858,986	2,400,967
Oregon-Washington R. R. & Nav. Co.	2,053	8,452,262	3,304,924	12,846,791	2,050,334	1,454,462	405,865	4,073,943	149,338	543,534	8,640,479	4,206,311	911,103	3,293,836	—49,737
Panhandle & Santa Fe	670	3,085,145	744,672	4,004,972	728,711	588,965	37,066	949,225	.....	96,160	2,395,918	1,609,054	109,468	1,498,752	778,235
Pennsylvania Company	1,758	38,643.439	8,154,338	51,481,031	6,468,493	8,429,962	697,199	16,481,251	288,338	1,151,302	33,511,947	17,969,084	2,532,447	15,434,208	8,535,025
Pennsylvania Railroad	4,541	117,319,951	30,729,459	162,111,188	20,216,571	30,937,644	1,730,364	55,908,665	2,103,746	3,848,736	114,745,728	47,365,460	5,796,515	41,529,619	24,742,962
Pere Marquette	2,247	11,158,431	3,133,682	15,732,982	1,315,070	3,147,529	277,027	5,427,166	36,060	370,634	10,569,599	5,163,383	479,803	4,676,081	1,414,777
Philadelphia & Reading	1,120	35,780,871	5,015,439	42,839,992	2,922,063	6,691,832	425,693	14,105,327	115,535	693,639	24,939,555	17,900,438	902,561	16,993,066	6,631,091
Philadelphia, Baltimore & Washington	717	8,878.766	6,711,690	17,201,761	2,346,892	3,069,903	232,216	6,573,874	894	451,218	12,674,998	4,526,762	492,946	4,030,946	1,913,638
Pittsburgh & Lake Erie	225	14.502,777	1,311,531	16,754,561	1,257,799	2,298,907	120,013	3,526,189	30,709	260,527	7,494,146	9,260,415	473,022	8,787,350	5,798,655
Pittsburgh, Cincinnati, Chic. & St. Louis	1,489	24,509,744	6,597,002	34,924,053	4,808,719	6,426,815	589,063	11,754,163	235,259	818,922	24,632,560	10,291,493	1,497,406	8,791,809	3,263,770
Pittsburgh, Shawmut & Northern	294	1,723,082	84,202	1,832,376	258,299	437,399	14,139	552,086	.....	42,523	1,304,446	527,931	16,849	511,082	267,782
Port Reading	21	1,202,600	.....	1,368,884	73,219	108,840	346	587,826	.....	1,656	771,879	597,005	90,000	507,005	35,246
Richmond, Fredericksburg & Potomac	88	1,194,052	819,547	2,325,527	171,956	267,566	31,247	772,554	30,360	67,078	1,340,761	984,765	75,336	909,177	283,056
Rutland	468	1,538,535	914,292	2,803,983	338,107	469,548	81,832	981,369	9,337	54,076	1,934,269	869,714	152,963	716,734	218,720
St. Joseph & Grand Island	258	1,029,567	236,880	1,344,312	258,564	200,971	39,501	451,300	.....	50,611	1,000.947	343,366	73,557	269,437	82,316
St. Louis & San Francisco	4,758	23,760,518	8,253,319	34,227,099	5,112,152	5,476,724	587,763	10.935,073	.....	831,412	22,705,075	11,522,025	1,566,380	9,940,803	1,184,219
St. Louis, Brownsville & Mexico	548	1,234,463	569,152	1,956,443	364,366	278,674	49,236	628,841	.....	91,178	1,383,735	572,707	79,389	491,368	117,234
St. Louis, Iron Mountain & Southern	3,362	18,262,304	4,300,268	24,374,739	4,097,023	4,851,708	553,608	6,935,295	74,152	551,847	17,037,062	7,337,678	1,011,633	6,299,268	223,408
St. Louis Merchants' Bridge Terminal	9	.....	2,187	1,695,913	217,854	81,191	7,077	756,258	.....	59,048	1,121,448	574,465	80,798	493,657	172,000
St. Louis, San Francisco & Texas	244	563,380	209,013	855,025	192,556	141,812	18,035	375,910	.....	40,476	768,789	86,236	16,151	69,904	38,018
St. Louis Southwestern	943	4,660,762	1,004,149	6,032,871	476,881	940,179	258,653	1,474,949	29,003	227,200	3,402,505	2,630,367	269,137	2,359,225	897,763
St. Louis Southwestern of Texas	811	2,290,542	701,737	3,242,488	543,999	726,403	124,437	1,354,151	8,178	163,094	2,847,665	394,823	160,815	233,257	483,289
San Antonio & Aransas Pass	724	2,120,847	740,392	3,070,668	598,189	497,673	59,723	1,325,599	.....	110,251	2,589,822	480,846	152,104	328,311	225,363
San Pedro, Los Angeles & Salt Lake	1,154	4,962,137	2,360,574	8,116,719	770,150	1,203,201	289,269	2,359,191	202,428	158,606	4,960,792	3,155,928	435,565	2,719,680	853,067
† Seaboard	3,449	6,277,975	1,960,530	9,162,373	998,134	1,217,840	281,568	2,996,798	64,016	255,980	5,814,336	3,348,036	395,027	2,950,370	.....
Southern	7,022	34,788,662	12,415,548	51,876,780	6,178,350	8,245,657	1,431,496	17,109,457	287,964	1,522,218	34,428,911	17,447,869	2,150,927	15,277,681	5,654,740
Southern Pacific	6,939	52,939.277	25,269,621	86,305,747	9,717,272	12,379,412	1,653,199	26,321,006	1,596,876	2,080,241	53,598,945	32,706,802	3,757,564	28,936,287	5,960,878
Spokane, Portland & Seattle	555	2,246,571	1,106.540	3,718,945	381,613	324,546	72,172	863,786	32,615	120,350	1,790,319	1,928,626	484,645	1,443,149	313,552
Staten Island Rapid Transit Co.	11	424,310	229,465	918,390	91,461	52,922	6,508	384,896	.....	22,366	558,153	360,238	46,000	314,235	—29,869
Tennessee Central	294	831,712	281,271	1,183,776	244,671	164,708	51,060	444,384	.....	59,561	964,298	219,477	42,384	176,547	76,501
Terminal R. R. Ass'n of St. Louis	37	.....	2,251	2,297,008	256,243	135,798	8,059	747,286	.....	43,349	1,190,735	1,106,273	242,785	863,478	125,285
Texas & New Orleans	468	2,239,166	799,484	3,364,469	523,831	724,328	72,659	1,164,235	89,913	90,888	2,664,936	699,532	182,751	514,725	386,537
Texas & Pacific	1,944	10,377,588	3,273,638	14,764,137	1,643,618	2,251,990	339,895	5,633,824	125,600	430,864	10,411,274	4,352,863	707,738	3,641,724	579,809
Toledo & Ohio Central	436	3,332,949	450,721	4,017,189	489,192	819,401	62,493	1,406,622	16,064	87,954	2,881,728	1,135,462	216,187	918,669	256,735
Toledo, Peoria & Western	248	529,206	343,553	931,158	140.260	266,622	20,476	341,193	.....	33,478	802,030	129,128	54,500	74,628	55,336
Toledo, St. Louis & Western	451	3,636,907	281,223	4,163,555	490,898	615,669	147,126	1,385,844	.....	76,000	2,714,681	1,448,874	159,742	1,289,132	543,695
Ulster & Delaware	129	383,039	236,069	764.550	79,749	86,645	11,774	311,858	558	27,958	518,542	246.008	31,500	214,139	167,703
Union Pacific	3,622	33.893,823	8,158,104	46,518,298	5.575,273	5,811,236	997,025	11,109,386	737,376	1,083,808	25,279,798	21,238,500	1,871,231	19,360.591	4,352,295
Union R. R. of Baltimore	8	1,066,225	199,216	1,281,748	142,691	.....	.....	42,919	.....	19,203	204,813	1,076,935	47,491	1,029,444	54,080
Union Railroad Co. of Pennsylvania	31	.....	.....	4,035,454	308,215	864,340	988	1,478,690	.....	40,218	2,692,452	1,343,002	66,106	1,276,897	1,215,764
Vandalia	917	6,574,119	1.822,917	9,450,812	1,435,783	1,740,089	209,584	3,293,735	90.061	222,857	6,992,110	2,458,702	335,400	2,122,046	613,929
Vicksburg, Shreveport & Pacific	171	761,314	349,498	1,239,558	199,965	227,520	31,758	383,810	18,766	45,786	907,366	332,192	73,781	258,411	228,468
Virginia & Southwestern	225	1,304,190	126,811	1,476,662	223,852	336,648	19,547	402,081	.....	35,709	1,017,837	456,824	62,780	394,045	96,399
Virginian	505	4,836,765	328,290	5,496,110	559,188	927,836	48,239	1,087,906	113,501	139,904	2,861,774	2,634,335	205,400	2,428,832	835,407
Wabash	2,519	18.843 004	4.751,657	25,656,261	2,890,420	3,946,274	766,649	9,345,176	137,095	583.298	17.647,752	8,008,509	755,856	7,247,497	2,980,555
Washington Southern	36	40',773	465,659	1.137,611	128,048	131,541	12,307	365,171	13,421	29,209	679,698	457,914	34,645	423,252	218,152
West Jersey & Seashore	358	1,933,366	3,246,178	5.628,349	956,720	803,542	107,005	2,206,708	24,617	138,587	4,237,179	1,391,170	356,607	1,033,904	372,054
Western Maryland	689	6.906.308	713.105	8,004,452	950,562	1,274,908	192,228	2,609,779	54,643	181,095	5,256,988	2,747,464	251.000	2,496,464	1,139,194
Western Pacific	941	3,653,796	1,424,200	5,486,535	780,373	557,489	196,604	1,721,758	136,159	163,578	3,555,961	1,930.573	254,117	1,675,056	1,103,511
Western Railway of Alabama	133	570 251	309.867	986,449	157,697	196.751	53,344	275,665	15,866	40,537	739,455	246,995	49,447	193,151	89,609
Wheeling & Lake Erie	512	5,577,263	467.718	6,527,867	812.091	1,040,314	75,193	1,948,536	15,288	130,876	4,022,298	2,505.568	325,156	2,180,405	1,519,321
Yazoo & Mississippi Valley	1,382	7,899,435	1,832,676	10,224,444	1,500,763	1,570,263	166,264	3,197,413	13,473	254,992	6,790,504	3.523,941	454,000	3,067,970	840,841

† Figures shown here are for period December 1, 1915, to March 31, 1916.

Damages from Storm

On June 2, Rock Island train No. 2, Chicago to Minneapolis, fell into Cold Water creek, near Packard, Iowa, because of rains undermining a bridge. Three persons were killed, 15 were reported missing and 15 were injured.

Wabash train No. 17, Chicago to St. Louis, was blown from the track near Saunemin, Ill., and 25 persons were reported injured.

Several bridges of the St. Paul were washed away in the vicinity of McGregor and Decorah, Iowa. Both the St. Paul and the Burlington detoured trains over the Chicago Great Western. South of La Crosse so many washouts occurred that train service was for a time completely paralyzed.

Book Agent Put One Over, But—

J. M. Davis, general manager of the Baltimore & Ohio Southwestern, was called up the other day by a man who said he was traveling for the authorities at Washington in the interest of "Safety First," and would Mr. Davis kindly permit him to address the clerks in the office for half an hour at noon time? Given permission, he discoursed so entertainingly that at the end of the half hour, in reply to his question if they would like to have him continue the address next day, they voted in the affirmative. Next day he spoke 15 minutes, and then produced a book on safety measures for which he could take orders at $1 per. The men were receptive on safety first but rejective on book agents, and so remarked. He sold no books. Investigation disclosed no closer connection with the government than a possible copyright on his book.

D. & H. Pulverized Fuel Locomotive to Be Exhibited at Atlantic City

The Delaware & Hudson Company has decided to exhibit its pulverized fuel-burning Consolidation locomotive at the Master Car Builders' and the Master Mechanics' Association conventions at Atlantic City. It is the intention to have the locomotive placed on the Reading tracks, and to have the engine under steam and the pulverized fuel-burning equipment operating on the morning of Saturday, June 17, and the afternoon of Tuesday, June 20. This is probably the largest Consolidation type locomotive ever built and is equipped for burning anthracite culm in pulverized form, but at Atlantic City it is the intention to use pulverized bituminous coal, as most of those who will be interested in the engine will be more familiar with that class of fuel.

Railroads in Preparedness Parades

The railroads were well represented in the preparedness parade at Chicago on June 3. Carl Howe, marshal of the transportation section, had over 5,400 marchers behind him, including nearly 400 women. A large contingent of railroad engineers marched in the engineers' section of the parade. The transportation section was headed by a band, immediately followed by a body of railroad executives, including J. M. Dickinson, former secretary of war and now receiver of the Chicago, Rock Island & Pacific; R. H. Aishton, president of the Chicago & North Western; H. Holden, president of the Chicago, Burlington & Quincy; C. H. Markham, president of the Illinois Central; S. M. Felton, president of the Chicago, Great Western; W. J. Jackson, receiver of the Chicago & Eastern Illinois; J. E. Gorman, chief executive officer, and A. C. Ridgway, chief operating officer, of the Rock Island; and B. L. Winchell, director of traffic of the Union Pacific. W. L. Park, vice-president of the Illinois Central, and A. F. Banks and S. M. Rogers, president and vice-president respectively of the Elgin, Joliet & Eastern, marched with the contingents of their respective roads. Marshal Howe had his section well organized, having assigned an assistant marshal to each organization in the following order: Murray Billings, traffic club; J. S. Bartle, Atchison, Topeka & Santa Fe; H. S. Garvey, Baltimore & Ohio; Harold Faye, Chicago, Burlington & Quincy; Fred Zimmerman, Chicago, Indianapolis & Louisville; W. I. Laird, Chicago, Great Western; H. M. Sloan, Chicago, Rock Island & Pacific; F. P. Eyman, Chicago & North Western; C. W. Galligan, Chicago & Alton; J. E. Govan, Chicago & Eastern Illinois; S. M. Rogers, Elgin, Joliet & Eastern; C. D. Turner, Erie; J. C. Clair, Illinois Central; W. H. Wharton, Marquette building railroad offices; James Webster, New York Central Lines; Dean Hodgdon, Pennsylvania Lines; H. H. Brigham, Webster building railroad offices; J. F. Barron, Union Pacific.

The engineers' section was organized by the Western Society of Engineers in co-operation with the Chicago Engineers' Club and the other engineering societies of the city. Over 2,300 marched in this section, among whom were hundreds of railroad men.

The railroads played no less important a part in the preparedness parade at St. Louis on June 3, than they did at Chicago on the same day. B. F. Bush, receiver of the Missouri Pacific, was marshal of the entire railroad division. He had two aids from each of the five railroad systems which have their headquarters in St. Louis, as follows: Missouri Pacific-Iron Mountain—A. M. Green, private secretary to Mr. Bush, J. G. Hollenbeck, general passenger agent; Wabash—J. L. Minnis, vice-president and general solicitor; A. O. Cunningham, chief engineer; St. Louis & San Francisco—Frank C. Reilly, assistant freight traffic manager; Nathan M. Rice, chief purchasing officer; Missouri, Kansas & Texas—George F. Buskie, auditor; L. W. Mosher, commercial agent; St. Louis Southwestern—J. E. Allen, assistant general freight agent; A. L. Burford, assistant general attorney. It is estimated that the Missouri, Pacific contingent numbered 3,000, the Wabash 1,500 and the Frisco 1,200.

The other roads also had large sections.

Freight Agents' Association

The American Association of Freight Agents will hold its 29th annual convention at Cincinnati, Ohio, on June 20, 21, 22 and 23. The headquarters will be at Hotel Gibson, Fourth and Walnut streets. The local associations, 110 in number, in the principal cities of the United States, which make up this national association, now have about 1,200 members.

The Cincinnati meeting will be devoted to the discussion of 17 different subjects proposed by members from 17 cities. Among the principal propositions are the following: To recommend the adoption of a rule requiring all boxes of valuable commodities to be strapped and sealed; to have uniform rules for car interchange at terminal stations; uniform rules for having conductors take records of seals on cars delivered to or taken from private sidings; to adopt a rule calling for a slight additional compensation to the carrier where freight is shipped "to order"; and to require shippers to mark their names and addresses on freight shipped in less than carloads.

A member from Denver will tell of the results of the operation of the joint car interchange and inspection bureau of that city, and there will be a report from a special committee on flour loading.

Railway Equipment Manufacturers

A meeting of the executive committee of the Railway Equipment Manufacturers to the Traveling Engineers' Association will be held at the Martinique Hotel, Atlantic City, at one o'clock, June 16.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, date of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, June 26, 1916, Boston, Mass.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, East St. Louis, Ill. Next meeting, June 20-23, 1916, Cincinnati, O.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Annual meeting, August 16-18, 1916, Memphis, Tenn.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 19-21, 1916, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, August 24-26, 1916, Hotel Sherman, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June 27-30, Hotel Traymore, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, Rooms 1116-8 Woodward Bldg., Washington, D. C. Annual meeting, June 28, 1916, Hotel Statler, Detroit, Mich.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Semi-annual meeting with Master Car Builders' Association. Annual convention, October 10, 1916, Waldorf-Astoria, New York.

ASSSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Semi-annual meeting, June 16, 1916, Hotel Denis, Atlantic City, N. J.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 20-22, 1916, St. Paul, Minn.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Next meeting, June 27, 28, Boston, Mass.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—P. C. Jacobs, H. W. Johns-Manville Co., Chicago. Meetings with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio. Next meeting, August 15-17, 1916, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Annual meeting, August 29 to September 1, Hotel Sherman, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Building, Chicago. Annual meeting, June 14, 1916, Atlantic City, N. J.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1063 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders' and Master Mechanics' Associations.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEWARK.—Roy S. Bushy, Firemen's Bldg., Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, 559 Broad St., Newark.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings, bi-monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—W. S. Crilly, 620 South 7th St., St. Louis, Mo. Annual meeting, December 5, 1916. Noonday meetings, October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next convention, June 20, 1916, Toronto, Ont.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Next meeting, September 5-8, 1916, Hotel Sherman, Chicago.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Grand Pacific Hotel, Chicago.

WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

A general hearing on classification of lumber and lumber products will begin at Chicago on July 10 before Chairman Meyer of the Interstate Commerce Commission. The order for the investigation was issued over a year ago.

The Portland (Or.) Traffic and Transportation Association has filed with the Interstate Commerce Commission a complaint against seven roads charging "grossly excessive" carload rates on salt from Portland to Washington, Idaho and Montana points.

Proposed increases of one cent a hundred pounds in rates on grain and grain products from Chicago and other points taking Chicago rates to Frankfort, Ky., were, on May 26, suspended by the Interstate Commerce Commission until September 28. Through rates of 11.2 cents a hundred pounds on grain for export and of 18 cents on iron and steel articles for export from Cincinnati to gulf ports were approved.

Negotiations between state officers of Oklahoma and representatives of the carriers looking to a compromise of the pending passsenger and freight litigation have proved futile, and it is understood they are at an end. The state had agreed to compromise on a passenger rate of 2½ cents a mile, provided the railroads would make the refund ordered by the commission some time ago and dismiss the cases in the federal court attacking the freight rates which had been promulgated by the commission. The attorney-general is said to be preparing to prosecute the case to an end when it is resumed in the federal court on July 10.

The passenger department of the Canadian Government Railways announces that, beginning June 13, a through train with sleeping cars will be run over the National Transcontinental between Quebec and Cochrane; and the cars will be run through to and from Winnipeg on the through trains from and to Toronto, which are already in service west of Cochrane. The new train will be run three times a week. From Quebec to Cochrane is 573 miles, and it is said that the line through from Quebec to Winnipeg, 1,350 miles, is the shortest route between these cities by 237 miles. The National Transcontinental at present operates between Parent, Que., and Cochrane, Ont., 322 miles, one passenger train on each of two days in the week. This is the thinnest portion of the line. From Quebec westward, 132 miles, to Fitzpatrick there is one train each way every day except Sunday, and a second train is run on three days in the week; westward on Monday, Wednesday and Friday, and eastward on Tuesday, Thursday and Saturday. From Fitzpatrick westward to Parent, 120 miles, the passenger train runs westward on Tuesday and Thursday, and the slower train on Tuesday, Thursday and Saturday, both with corresponding eastward runs.

"Ports of the United States" is the title of a report by Grosvenor M. Jones, recently issued by the Department of Commerce, summarizing the last five years' history of water transportation facilities, and incidentally of some railroad facilities, at the principal ports of the United States—those having a water borne commerce amounting to 1,000,000 tons or $30,000,000 in value yearly. It is a volume of 431 pages, and can be had of the Superintendent of Documents, Washington, for 75 cents. There are 68 ports of this degree of importance, including 25 on the Great Lakes and two on the Ohio River. Four ports, namely, New Orleans, San Francisco, Los Angeles and San Diego own the most of their water front, and there is a general tendency toward public ownership. New Orleans and San Francisco have elaborate public-owned terminals, and New York owns a part of its water front; but the piers owned by New York City are leased for long terms to private individuals. This, says the report, is not the best policy, as it prevents an effective public control and makes difficult any effort to co-ordinate the terminal facilities of the port. Boston has the largest pier in the United States, Commonwealth Pier No. 5; this has cost about $4,000,000 and is 1,200 ft. long and 400 ft. wide. Boston will soon have the largest dry dock in the western hemisphere, 1,200 ft. long.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

Rates on Anthracite Coal to Milwaukee

City of Milwaukee v. Chicago, Milwaukee & St. Paul et al. Opinion by Commissioner Daniels:

Upon complaint by the city of Milwaukee that the rates on anthracite coal in carloads from Pennsylvania mines to Milwaukee are unreasonable and discriminatory, the commission holds that neither the rates all rail nor those via the car ferries across Lake Michigan are unreasonable or discriminatory against Milwaukee, and that the across-lake rate for local delivery at Milwaukee, which is 25 cents higher than the proportional across-lake rate to Milwaukee on traffic destined beyond is unduly discriminatory against Milwaukee. Complaint dismissed. (39 I. C. C., 363.)

Rates from Shreveport, La.

Shreveport Chamber of Commerce v. Kansas City Southern et al. Opinion by Commissioner Hall:

Upon complaint alleging that class rates from Shreveport, La., to certain stations in Arkansas and Oklahoma on the lines of the St. Louis & San Francisco and the Texas, Oklahoma & Eastern are unreasonable and prejudicial, the commission holds that in view of pending decisions involving the readjustment of class rates in this southwestern territory, the reasonableness per se of the rates assailed will not be passed upon in this proceeding.

The present rates between Shreveport and the stations in Arkansas and Oklahoma named in the complaint are prejudicial to Shreveport as compared with the class rates applying between these stations and Texas jobbing points, and defendants are required to remove the discrimination. (39 I. C. C., 296.)

Rates to Ruston, La.

Thompson, Ritchie & Co., Inc. v. Vicksburg, Shreveport & Pacific et al. Opinion by Commissioner Hall:

Class and commodity rates between St. Louis and Kansas City, Mo., Memphis, Tenn., defined territories, Atlantic seaboard territory via Gulf and Atlantic ports, New Orleans, La., on interstate or foreign traffic, and points in Texas, on the one hand, and Ruston, La., on the other, are found unlawful.

Mileage class rates between Ruston and certain points in Arkansas on the Chicago, Rock Island & Pacific, and mileage class rates on interstate traffic between Ruston and other points in Louisiana on the Vicksburg, Shreveport & Pacific, are considered in connection with the pending decision of other related proceedings.

Portions of fourth section applications which seek authorization to maintain higher class and commodity rates from and to Ruston than from and to Shreveport, Alexandria, and Monroe, La., are denied. (39 I. C. C., 287.)

Bituminous Coal to Mississippi Valley Territory

Opinion by the commission:

In the original report in this case the carriers were granted authority to continue rates on coal from mines in Illinois, Kentucky, Tennessee and Alabama to certain points on the Mississippi river, Gulf of Mexico, and waters tributary thereto, and to certain common and junction points in interior Mississippi Valley territory lower than rates applied to intermediate points, upon the condition that the rates to such intermediate points should no exceed the rates named in a prescribed scale.

This distance scale is now modified so as to permit the establishment of relative rates from mines in Illinois, Kentucky and Alabama. The carriers are further authorized to continue rates on coal from mines in Alabama to Greenville and Vicksburg, Miss., and Slidell, La., lower than rates to intermediate points. The order respecting rates from mines in Illinois, Kentucky and Tennessee to junction points in Tennessee and Kentucky and that respecting rates from Brilliant and Blocton, Ala., to Kosciusko, Miss., are also modified. (39 I. C. C., 378.)

Rates on Lumber to Memphis, Tenn.

Memphis Freight Bureau for Banning Lumber Company et al. v. St. Louis, Iron Mountain & Southern et al. Opinion by Commissioner Hall:

Complaint is made that the rates on lumber, logs, bolts, staves, and heading from points in Arkansas and Louisiana to Memphis, Tenn., are unreasonable. The commission holds: The rates of certain carriers on hardwood bolts and pine logs from points in Arkansas to Memphis should be revised to conform with rates on hardwood logs prescribed in Vandenboom-Stimson Lumber Co. v. St. L. I. M. & S. (38 I. C. C., 432.) The rates on pine and cypress lumber to Memphis from points in southeastern Arkansas as compared with the rates on hardwood lumber from the same points to Memphis are prejudicial. The rates on lumber to Memphis from certain stations on the Iron Mountain in Arkansas are in violation of section 4. The rates on lumber to Memphis from stations on the Texas & Pacific, Fouke, Ark., to Morley, La., inclusive, are unreasonable, and reasonable rates are prescribed. With the foregoing exceptions the rates on lumber from points in Arkansas and Louisiana to Memphis are just and reasonable. The rates on lumber between points in Arkansas as compared with the rates from Arkansas points to Memphis subject Memphis to disadvantage. No reparation will be awarded. (39 I. C. C., 303.)

Rates to Marshall and Jefferson, Tex.

Cities of Marshall and Jefferson, Tex., v. Texas & Pacific et al. Opinion by the commission:

On complaint that the present class and commodity rates to Marshall and Jefferson, Tex., from points east and north thereof, are unreasonable and discriminatory in comparison with like rates to Texarkana, Arkansas and Shreveport, La., the commission finds as follows: The class rates from Memphis, Tenn., to Marshall and Jefferson are unreasonable and discriminatory in so far as they exceed rates based on the mileage scale prescribed in *Memphis Freight Bureau v. St. Louis, Iron Mountain & Southern*, 39 I. C. C., 224. It is further held that the class rates from St. Louis should not exceed the rates from Memphis by more than the differentials therein named. The carriers will be expected to revise their commodity rates in harmony with the class rates, and to accord to Marshall and Jefferson commodity rates as freely and to the same extent as to Texarkana and Shreveport.

Rates from New Orleans and from Atlantic seaboard territory via the Gulf and rail to Marshall and Jefferson are held unreasonable to the extent that they exceed the aggregates of the intermediate rates based on Shreveport.

Defendants' applications for authority to continue to charge lower rates to Texarkana and Shreveport on traffic through Marshall and Jefferson than is charged on like traffic to Marshall and Jefferson will be granted, provided rates to the intermediate points do not exceed those which are prescribed in the report. (39 I. C. C., 249.)

Rates from Memphis, Tenn.

Memphis Freight Bureau v. St. Louis, Iron Mountain & Southern et al. Opinion by Commissioner Meyer:

Upon complaint of the Memphis Freight Bureau, the class rates form Memphis to points in southern Arkansas and Louisiana are found to be unreasonable in so far as they exceed the following mileage scale:

Distances (in miles)	1	2	3	4	5	A	B	C	D	E
200	81	69	57	49	41	42	32	28	24	20
300	105	89	74	63	53	55	42	37	32	26
400	120	102	84	72	60	62	48	42	36	30
500	132	112	92	79	66	69	53	46	40	33

The carriers will be expected to graduate their rates for intermediate distances in harmony with the rates in the table.

The commission also finds that the class rates from Memphis to points in southern Arkansas and Louisiana unjustly discriminate against Memphis to the undue preference of St. Louis, and appropriate class differentials applying from Memphis under St. Louis are prescribed under which a differential on a 20 cent scale is found proper at Texarkana, Ark., which difference

it is held should be gradually decreased with increased distance until a differential on a 10 cent scale is reached at Lake Charles, La. The commission finds in this connection that combinations, which make lower than through rates, should not be exceeded even though the factors comprising the combination are governed by different classifications. It is further held that the carriers should revise their commodity rates in harmony with the determination reached in regard to class rates.

In a related investigation, *Shreveport Chamber of Commerce et al. v. Alabama & Vicksburg et al.*, the findings in the above case are adopted with respect to the rates from Memphis to Shreveport and Alexandria, La.; the St. Louis differentials over Memphis on traffic from St. Louis to Shreveport and Alexandria; and the principle to be applied under the fourth section. In addition the commission takes up the rates from Kansas City, and from points in other territories, including eastern seaboard territory to Shreveport and Alexandria. Increased rates from these eastern territories on the first four classes are allowed, and rates on the other classes from these territories are held not to be unreasonable or otherwise unlawful. (39 I. C. C., 224.)

Rates Between Memphis and Arkansas and Missouri

City of Memphis et al. v. Chicago, Rock Island & Pacific et al. Opinion by Commissioner Daniels:

Upon complaint that the interstate class and commodity rates between Memphis and Arkansas and Missouri points are unreasonable and prejudicial to Memphis in favor of Arkansas points, St. Louis and East St. Louis, the commission finds:

The class and commodity rates between Memphis and Arkansas points, with certain exceptions, are reasonable as a whole; the maintenance of class and commodity rates between points in Arkansas lower by more than a reasonable bridge toll across the Mississippi river than the interstate class and commodity rates between Memphis and Arkansas points for similar distances results in a relationship unduly prejudicial to Memphis, which discrmination must cease.

The class and commodity rates between Memphis and Missouri points are not unduly prejudicial to Memphis when compared with the class and commodity rates between St. Louis and East St. Louis and Missouri points.

The class and commodity rates betweeen Memphis and northeastern Arkansas points are reasonable as a whole; the present class and commodity rates between St. Louis and East St. Louis and northeastern Arkansas points are prejudicial to Memphis. The carriers are given 60 days within which to submit nondiscriminatory rates.

The class and commodity rates between Memphis and southern Arkansas points, such as El Dorado, Crossett and Camden, are prejudicial to Memphis except in so far as these rates are made upon differentials under the rates from St. Louis and East St. Louis to the same points in accordance with the differential scale prescribed in Memphis Freight Bureau v. St. L. I. M. & S. (39 I. C. C., 224.)

The rates on cotton from Arkansas and Missouri points to Memphis are prejudicial to Memphis in so far as they exceed rates made on a differential of 10 cents per 100 lb. under the rates to St. Louis and East St. Louis.

The practices of the defendant carriers in granting certain concentration, compression and reconsignment privileges at Arkansas points, St. Louis and East St. Louis, while refusing such privileges at Memphis, are prejudicial to Memphis.

The practices of the defendant carriers of making free delivery of cotton to warehouses and compresses at Arkansas points and East St. Louis while refusing to make such free delivery at Memphis are not prejudicial to Memphis.

The rates on rough rice from Arkansas stations to Memphis are unreasonable and prejudicial to Memphis in favor of Arkansas points and reasonable rates are prescribed for the future.

The bridge tolls of the Kansas City & Memphis Railway & Bridge Company between Memphis and Hopefield, Ark, are not unreasonable.

A complaint that "sundry rules, regulations and exceptions to classifications, etc., in effect over the lines of the defendant carriers" between stations in Arkansas and between stations in Missouri are unduly prejudicial to Memphis in favor of the Arkansas and Missouri points, is dismissed.

The final order affirming the reasonableness of the present interstate class and commodity rates, and requiring the discontinuance of the discrimination against interstate commerce, is held in abeyance to permit within a period of 30 days applications for further hearing and argument by any interested party deeming itself prejudiced by the order forecast herein. (39 I. C. C., 256.)

STATE COMMISSIONS

The Tennessee Railroad Commission has issued a decision in the matter of the Illinois Central's passenger rates in that state, and holds that all fares must be reduced to 2½ cents by July 1.

The Railroad Commission of Louisiana is calling the attention of railroads in that state to the absence of provision for watering livestock at many of the shipping pens in the state, and announces the intention of instituting proceedings with a view to the adoption of regulations that will correct the evil.

PERSONNEL OF COMMISSIONS

Henry R. Trumbower, assistant professor of political economy at the University of Wisconsin, has been appointed a member of the Wisconsin State Railroad Commission, to fill the vacancy caused by the resignation of Halford Erickson. The appointment is for a term ending in February, 1917, and took effect on June 1. Mr. Trumbower was born at Passer, Pa., in 1882, and graduated from Lehigh University with the degree of A.B. in 1903. After teaching for a few years, he took postgraduate work in political economy at Princeton University, where he received the degree of M.A. in 1908. At Princeton he studied under Prof. W. M. Daniels, later appointed to the first public utilities commission of New Jersey and now a member of the Interstate Commerce Commission. In 1909 and 1910, Mr. Trumbower studied at the University of Munich, Germany. Since 1910, he has been a member of the faculty of the department of political economy at the University of Wisconsin, where a considerable part of his time has been devoted to courses of application in the commercial and engineering fields. A statistician of ability, he has conducted statistical studies of various economic problems at the university. For a time he was associated with F. B. Gilbreth, expert on efficiency and business management, in New York City.

Henry R. Trumbower

COURT NEWS

Crossing Accident—Automobiles

The Kansas Supreme Court holds that the driver of an automobile cannot recover damages for injury to himself and his machine where he approaches a track at a place at which he cannot see along the track until his automobile is at a spot where it will be struck by a passing engine or cars, and does not stop his car to ascertain whether or not there is danger, although he listens before going into the place of danger and does not hear any engine or cars coming.—Webe v. Atchison, T. & S. F. (Kan.), 156 Pac., 742.

Company and Servant as Joint Tort Feasors

In an action against a railroad and a conductor, sued as joint tort feasors, the conductor was charged with willfully pitching off the train a trespassing boy, who was killed. The South Carolina Supreme Court holds that a judgment against the rail-

road alone, and in favor of the conductor, could not be sustained. The conductor was acting in a dual capacity, individually and as representative of the railroad company, and if he did not do the act with intent the company did not do it.—Sparks v. A. C. L. (S. Car.), 88 S. E., 730.

Crossing Accident—Failure to Look and Listen

A pedestrian, 44 years old, in full possession of all his faculties, at midday attempted to cross a railroad track without looking for the approach of a train, looking back (when some one called him) when within two feet of the tracks, where he was struck by the pilot beam of a train and killed. The Missouri Supreme Court held that the railroad was not liable for his death, though it was negligent in allowing an electric warning bell at the crossing to be out of repair.—Blain v. Missouri Pacific (Mo.), 184 S. W., 1,142.

Appraisal of Damage to Freight

There is not and never has been in the state of Louisiana, says the Supreme Court of Louisiana, any general law that damage to goods in transit shall be determined by sale at public auction. The few cases apparently so holding were based on special legislation, no longer in force, applicable only to the Port of New Orleans. In cases not covered by such special legislation, the Louisiana court has followed the common-law rule that the ascertainment of loss or damage to freight in transit is a matter resting on the ordinary rules of evidence. It holds that damage to a carload of cotton seed in a heated and rotten condition might be determined by expert inspection and appraisement, after notice to the railroad company. The railroad, having been condemned to make good the damage to the goods, the plaintiff could not also recover the freight paid or any part of it. If the railroad makes good the damage, it will have earned the freight.—Planters' Cotton Oil Co. v. Texas & Pacific (La.), 71 So., 366.

Contributory Negligence of Licensees on Tracks

In an action for personal injury, it appeared that the plaintiff was engaged in loading lumber on cars on a side track of the defendant railroad (and therefore was a licensee) and knew that a train was due, saw the smoke and heard the noise of it when it was a mile away. He directed one of his employees to flag it, and warned a farmer who was unloading near the side track to look out for his horses, as a train was coming. He then went around the end of a string of cars on the side track and started to cross the main track without looking toward the approaching train, and was struck by the locomotive. His attention was not distracted by the approach of any other train. The Wisconsin Supreme Court held that he was guilty of contributory negligence, barring recovery. He did not come within the Wisconsin statute providing that want of ordinary care contributing to injury shall not bar recovery against a railroad for its omission to give proper signals of the approach of a train, since he knew of the approach of the train and the giving of signals would not have added to the warning which he had.—Jay v. Northern Pacific (Wis.) 156 N. W. 626.

Crossing Accident—Care by Traveler

The Massachusetts Supreme Court holds that the driver of an automobile, approaching a crossing where there is opportunity for sight and hearing, is not in the exercise of due care unless he looks and listens, and governs his conduct accordingly. He cannot entirely rely on signals and the performance of duty by the railroad's agents. The burden is on him to show his exercise of due care for his own safety. Evidence in an action for the death of occupants of an automobile killed at a crossing showed that the express train which struck the car was running at 35 or 40 miles an hour and that no signal by bell or whistle was given. The automobile was going at 6 to 12 miles an hour, and could have been stopped in about sixteen feet. It passed a space between two houses where, about 100 feet from the crossing, a long stretch of track was plainly visible. Here the driver of the car could have looked far enough to see an approaching train and then had ample time to save himself from danger. It was held that the evidence failed to show the use of such care as the place and occasion required, and no recovery could be had.—Fogg v. New Haven (Mass.) 111 N. E. 960.

Railway Officers

Executive, Financial, Legal and Accounting

R. L. Knebel, superintendent of the Minot division of the Great Northern at Minot, N. Dak., has been appointed assistant controller, with office at St. Paul, Minn.

L. A. Farquhar has been appointed assistant auditor of the Oregon-Washington Railroad & Navigation Company, vice H. M. Watkins who has resigned to accept service with another company.

A. C. Matheson has been appointed auditor, also general freight and passenger agent of the Cumberland Railroad, with office at Artemus, Ky., vice W. B. Starke, resigned on account of ill health.

Operating

Charles W. Fee has been appointed trainmaster of the Northern Pacific, with headquarters at Tacoma, Wash.

E. A. Eskridge has been appointed assistant to the general superintendent of the Chicago, Indianapolis & Louisville, with office at LaFayette, Ind.

James O. Halliday, whose appointment as superintendent of transportation of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., has already been announced in these columns, began railway work in 1887 as an operator on the Norfolk & Western. From 1888 to 1891 he was with the Chesapeake & Ohio in the capacity of operator and clerk, and during 1891 and 1892 was in the service of the Baltimore & Ohio as an operator. He went to the New York Central in 1892 as a signalman; the following year he entered the service of the New York, New Haven & Hartford, and has been in the continuous service of that road ever since. From 1893 to 1896 he served as an operator, also signalman, and was engaged in special service. In the latter year he became master of transportation, remaining in that capacity until September, 1913, when he became assistant to the general manager, with office at New Haven, which position he held at the time of his recent appointment as superintendent of transportation of the same road, as above noted.

J. O. Halliday

W. M. Jeffers, general superintendent of the Union Pacific at Omaha, Neb., has been appointed general manager, with office at Omaha, succeeding Charles Ware, resigned.

W. J. Stone Burner has been appointed general superintendent of the Okmulgee Northern and the Oklahoma, Kansas & Missouri Interurban with headquarters at Miami, Okla.

R. F. Finley has been appointed superintendent of telegraph of the New York Central Lines, west of Buffalo, the Lake Erie & Western Railroad and the Western Union Telegraph Company, with headquarters at Cleveland, Ohio.

E. C. Bagwell, president's assistant on the Seaboard Air Line and general manager of the Raleigh & Charleston and the Chesterfield & Lancaster with headquarters at Norfolk, Va., has been appointed general manager, also of the Tampa Northern, vice H. W. Stanley, resigned.

George Hodges, chairman of the Committee on Relations between Railroads of the American Railway Association, has just

been elected also chairman of the Committee on Legal and Traffic Relations. A portrait and sketch of Mr. Hodges were published in the *Railway Age Gazette* of April 14.

N. L. Howard, superintendent of the Burlington division of the Chicago, Burlington & Quincy, has been transferred to the Hannibal division, with office at Hannibal, Mo., vice W. C. Welch, who has been appointed superintendent of terminals at St. Louis, Mo. W. E. Fuller, assistant superintendent of the Galesburg division, has been transferred to the La Crosse division, with headquarters at Dayton's Bluff, Minn.

A. B. Ramsdell, superintendent of the Illinois division of the Chicago, Rock Island & Pacific, with office at Rock Island, Ill., has been appointed assistant general manager of the first district, with headquarters at Des Moines, Iowa, vice F. J. Easley, resigned to enter the service of another company. D. Coughlin, superintendent of the Missouri division, with headquarters at Trenton, Mo., has been transferred to Rock Island, as superintendent of the Illinois division, vice Mr. Ramsdell. F. W. Rosser, superintendent of the Dakota division at Estherville, Ia., has been transferred to Trenton, Mo., as superintendent of the Missouri division, vice Mr. Coughlin. A. L. Haldeman, trainmaster at Estherville, Ia., has been appointed acting superintendent of the Dakota division, vice Mr. Rosser.

Traffic

C. O. Jackson, recently appointed assistant general passenger agent of the St. Louis, San Francisco & Texas, the Ft. Worth & Rio Grande, and the Brownwood North & South, first entered the railway service as a telegraph operator and ticket agent of the Chicago, Rock Island & Pacific, in 1890. He left the service of the Rock Island in July, 1898, to become a ticket agent for the St. Louis & San Francisco at Springfield, Mo. In June, 1901, he was appointed traveling passenger agent for the Frisco, and served in that capacity successively at Chattanooga, Tenn.; Atlanta, Ga.; Birmingham, Ala., and Kansas City, Mo., until the year 1905, when he was promoted to southwestern passenger agent, with headquarters at Dallas, Tex. In March, 1908, he was appointed division passenger agent at Oklahoma City, Okla., and remained in that capacity until May 1, 1916, when he was appointed assistant general passenger agent.

C. O. Jackson

J. B. Hall, traveling freight agent of the Chicago, Rock Island & Pacific, has been appointed commercial agent with office at Cincinnati, Ohio, vice C. C. Spalding, deceased.

H. B. Stafford, commercial agent of the Southern at Cincinnati, Ohio, has been transferred in the same capacity to Minneapolis, Minn. William Humphreys, commercial agent at Evansville, Ind., has been transferred to Cincinnati, vice Mr. Stafford. J. T. Mudd, commercial agent at Minneapolis, succeeds Mr. Humphreys at Evansville.

Frederick L. Baker, who has been appointed eastern superintendent of the Empire Line, with headquarters at Philadelphia, Pa., as has been announced in these columns, was born on August 5, 1876, at Wooster, Ohio, and began railway work on September 1, 1897, as chief clerk of the Cleveland agency of the Empire Line. He was promoted to agent in May, 1902, in charge of the Milwaukee, Wis., agency. He was transferred as agent to Chicago in December, 1904, and to Cleveland in November, 1906, which position he held at the time of his recent appointment as eastern superintendent of the same line, as above noted.

Hiram M. Pearce, whose appointment as general traffic manager of the Chicago, St. Paul, Minneapolis & Omaha has been announced, was born on October 27, 1857, at Elkton, Cecil county, Md. He was educated in the common schools, and entered railway service in 1873 as a clerk in the local freight office of the Philadelphia, Wilmington & Baltimore at Wilmington, Del. He went to St. Paul, Minn., in April, 1879, and since that time has been continuously in the service of the Omaha, with the exception of eighteen months, during which time he was secretary of the St. Paul City Railway. From September 1, 1887, to November, 1888, he was assistant general freight agent of the Omaha, and from the latter date until October 1, 1896, was first assistant general freight agent. From October 1, 1896, to August, 1906, he was general freight agent of the same road, and from 1906 up to the time of his recent promotion to general traffic manager, was freight traffic manager, with headquarters at St. Paul. As general traffic manager he will continue to have offices at St. Paul.

I. M. Griffin, recently appointed assistant freight traffic manager of the Texas & Pacific with headquarters at Dallas, Tex., was born at Brownsville, Tenn., on August 6, 1875. He was educated in the public schools of Nashville, Tenn., at Mt. Lebanon University, Mt. Lebanon, La., and at Howard-Payne College, Brownwood, Tex. He entered railway service in 1893, as a clerk in the local freight office of the International & Great Northern at Palestine, Tex., and held various positions in the same office until 1898, when he was made chief clerk of the local freight office of the same road at Houston, Tex. From 1900 to 1901, he was soliciting freight agent at Houston, Tex., and from February, 1901, to August, 1905, he was joint agent at Mineola, Tex., for the International & Great Northern, the Missouri, Kansas & Texas and the Texas & Pacific. Subsequently, he was stationed at Houston, Tex., as city passenger and ticket agent until March, 1906, when he became local freight and ticket agent of the International & Great Northern and the Galveston, Houston & Henderson in the same city. From January, 1907, to May, 1908, he was joint agent of the Galveston, Houston & Henderson, International & Great Northern and the Missouri, Kansas & Texas at Galveston, Tex. He then became general agent of the International & Great Northern at Galveston, and on September 1, 1909, was appointed general cotton agent of the same road at Palestine, Tex. He was appointed division freight agent, with headquarters at Fort Worth, Tex., in February, 1910, retaining the position of general cotton agent. From June, 1911, to January 1, 1913, he was assistant general freight agent of the Texas & Pacific with headquarters at Dallas, Tex., retaining the position of general cotton agent of the International & Great Northern. From January 1, 1913, to May 15, 1916, he was general freight agent of the Texas & Pacific with office at Dallas.

I. M. Griffin

Engineering and Rolling Stock

T. H. Hickey, roadmaster of the Canadian division of the Michigan Central, has been promoted to track inspector, with headquarters at Detroit, Mich.

J. H. Gaston, master mechanic of the Georgia Railroad at Augusta, Ga., has been appointed master mechanic of the Atlanta & West Point and the Western Railway of Alabama, with office at Montgomery, Ala., vice O. H. Attridge, resigned to accept service elsewhere.

John Dickson, general master mechanic of the Spokane, Port-

land & Seattle, the Oregon Trunk, the Pacific & Eastern, the Spokane & Inland Empire, the Oregon Electric and the United Railways, has been promoted to superintendent of motive power with headquarters at Portland, Ore., the position of general master mechanic having been abolished, effective June 1.

J. C. Benson has been appointed master mechanic of the Butte division of the Great Northern, with headquarters at Great Falls, Mont., vice A. B. Ford, assigned to other duties. Robert Schule has been made master mechanic of the Montana division, with headquarters at Havre, Mont., vice J. C. Benson, transferred. George W. Weber has been appointed master mechanic of the Minot division, with headquarters at Minot, N. D., vice E. English assigned to other duties. Frank J. Bauer, locomotive foreman at Kelly Lake, Minn., has been promoted to master mechanic of the Breckenridge division, with office at Breckenridge, Minn., in place of S. J. Fero, assigned to other duties.

Purchasing

R. A. Jacobs, inspector of stores, of the St. Louis and San Francisco, at Springfield, Mo., has been appointed superintendent reclamation plant, with headquarters at Springfield, vice R. F. Whalen, resigned.

H. J. McQuade has been appointed purchasing agent of the Lehigh Valley, with headquarters at New York. Mr. McQuade entered the service of the Lehigh Valley as a boy, 29 years ago. His first work was as a clerk in the local offices in Philadelphia. On February 3, 1902, he was transferred to the general bookkeeping department ,and on December 23, 1903, he was appointed chief clerk to the general auditor. He was elected assistant treasurer of the same road, with office at Philadelphia, Pa., on January 20, 1909, and remained in that position until June 1, 1910, when he left the service of the Lehigh Valley to take up other duties. Mr. McQuade now returns to the service of the same road as purchasing agent, with headquarters at New York, as above noted.

H. J. McQuade

OBITUARY

Charles Sooysmith, one of the best known civil engineers in America, and formerly and for 16 years president of the firm of Sooysmith & Company, contracting engineers, died at his home in New York City on June 1, at the age of 60. He was born in Buffalo, N. Y., and after receiving his degree from the Rensselaer Polytechnic Institute in 1876, studied in the Polytechnicum in Dresden and in other European technical colleges. He introduced into the United States the freezing process of excavation and was granted many patents for its use in subaqueous tunnels. He was the first to use the caisson system and during the past fifteen years he had an important part in the construction of the extensive subways of New York City. For a short time in his earlier years (1879-80) he was assistant superintendent of the maintenance of way department of the Atchison, Topeka & Santa Fe.

Hugh F. Coyle, superintendent of the Belleville division of the Grand Trunk at Belleville, Ont., who was granted leave of absence in April on account of illness, died suddenly on May 31, at a point near Kennedy, N. Y., while traveling on an Erie train.

J. H. Miller, division passenger agent of the Southern Pacific Lines at Galveston, Tex., died on June 1.

Equipment and Supplies

LOCOMOTIVES

THE TEXAS & PACIFIC is reported in the market for 8 switching locomotives.

THE ANACONDA COPPER MINING COMPANY is reported inquiring for prices on several Consolidation, Prairie and Mallet type locomotives.

THE WALTER A. ZELNICKER SUPPLY COMPANY, St. Louis, Mo., is in the market for two 60 to 70-ton standard gage geared locomotives.

BARTRAM BROTHERS, INC., 17 Battery place, New York, have ordered 2 Mogul type locomotives from the Baldwin Locomotive Works for the Central Consuelo Railroad.

THE BOSTON & ALBANY will convert 12 Consolidation locomotives to switching locomotives in its West Springfield, Mass., shops. The engines will also be equipped with superheaters.

THE SOLVAY PROCESS COMPANY, Syracuse, N. Y., has ordered one superheater six-wheel switching locomotive from the American Locomotive Company. This locomotive will have 21 by 26-in. cylinders, 51-in. driving wheels, a total weight in working order of 156,000 lb.

THE RUSSIAN GOVERNMENT'S locomotive inquiry, concerning which it was noted in the *Railway Age Gazette* of May 26 that the Canadian Locomotive Company had been asked to quote prices on 600 locomotives, is understood to include at least 600 and possibly 1,000 engines of the Decapod (2-10-0) type similar to those which were ordered about this time last year.

FREIGHT CARS

THE TEXAS & PACIFIC is contemplating the purchase of 100 ballast cars.

THE DENVER & RIO GRANDE has ordered 500 box cars from the Pullman Company.

THE BALTIMORE & OHIO has ordered 1,000 box cars from the Haskell & Barker Car Company, and is also securing prices on 1,000 underframes for refrigerator and box cars.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 300 underframes in addition to the 300 center constructions mentioned in the *Railway Age Gazette* of April 28.

THE CARNEGIE STEEL COMPANY has revived its inquiry for freight cars, and is now inquiring for 68 70-ton hopper, 70 70-ton gondola, 15 70-ton flat and 20 50-ton hopper cars.

PASSENGER CARS

THE TEXAS & PACIFIC is contemplating the purchase of a number of postal cars.

THE CHICAGO, LAKE SHORE & SOUTH BEND is inquiring for 2 baggage and express cars.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 2 passenger car underframes from the Pullman Company.

THE CANADIAN GOVERNMENT RAILWAYS are reported as having ordered 3 baggage cars from the Preston Car & Coach Company.

THE UNITED RAILWAYS OF HAVANA are in the market for 5 motor coaches in addition to the 3 third-class cars mentioned in last week's issue.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 45 coaches and 10 combination passenger and baggage cars for suburban service from the Pullman Company.

THE LAKESIDE & MARBLEHEAD has ordered a gasoline motor car to replace its steam locomotive trains in passenger service between Lakeside, Ohio, and Marblehead, a distance of 10 miles.

The car which is being built by the McKeen Motor Car Company, Omaha, Neb., is a standard steel McKeen type, 55 ft. long, and with 200 hp.

IRON AND STEEL

THE PENNSYLVANIA RAILROAD has ordered 1,200 additional tons of bridge work from the Pennsylvania Steel Company.

THE PHILADELPHIA & READING has ordered 200 tons of steel for a bridge at Pottstown, Pa., from the American Bridge Company.

SIGNALING

THE MISSOURI, KANSAS & TEXAS will install mechanical interlocking plants with electric distant signals at Wagoner, Okla.; Kincaid, Kan.; Selma; Moran, Ft. Scott and Chetopa.

MISCELLANEOUS

THE TOLEDO & INDIANA has ordered a 2,000 kw. turbine generator for its power plant at Stryker, Ohio, from the General Electric Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for a standard gage 10 to 15-ton, four or eight-wheel locomotive crane with a magnet or with sufficient boiler capacity, to take care of a generator set.

SIAMESE SOUTHERN RAILWAY.—Another section of the Siamese Royal State Railways, Southern Line, extending from Ban Krut to Bang Sapan Yai, was opened for passenger and goods traffic on March 15, 1916. It is reported that the construction of this line is proceeding satisfactorily, although, owing to heavy floods during last year, the embankments suffered in some places. There is no definite time given for the completion of this railway, but it is expected that within three years, at most, connection will be made with the Federated Malay States Railways.

COST OF HIGH LIVING IN 1875.—When "Pullman's Palace Hotel Coaches" began running on the Erie, between New York and Chicago, in the early seventies, wild game formed one of the principal items of food. It was much more plentiful than now. Prices then, however, as disclosed by one of the first menu cards, were in many cases higher than those charged on the Erie dining cars today. On some items they were from 10 per cent to 50 per cent higher. Among the delicacies in the game list, this original menu card contained the following dishes: Prairie chicken $1, pheasant $1, snipe quail, or golden plover on toast 75 cents, blue winged teal 75 cents, woodcock on toast $1, venison steak with jelly 60 cents.—*Wall Street Journal.*

THE BALKAN RAILWAYS.—Railways have played their part in those events in the Near East which have exercised so great an influence on the making of this war. Owing to racial jealousies and Turkish domination, the Balkan peninsula remained devoid of railways until the second half of last century, and it was not until after the Crimean war that the Sultan authorized the construction of two lines, one from Constantinople to Belgrade, via Roumelia and Serbia, and the other from Salonica into Macedonia. By an agreement of 1869, a concession for the construction of 1,200 miles was given to Baron Hirsch, and after various changes there was formed what is known to-day as the Oriental Railways Company, a concern whose capital is mainly in the hands of Germans, Austrians and German-Swiss, although there are a few English, French and Belgian shareholders. The Russo-Turkish war, which led to the independence of Serbia, to the creation of the Principality of Bulgaria, and to the granting of autonomy to Eastern Roumelia, caused great political changes in the Balkans; but in order to mollify Turkey, the Congress of Berlin specially left the Porte with rights over the railways of the Balkan peninsula and the Oriental Railways Company. This was the beginning of the Austro-German attempts both to extend their political power in the Near East and to wring contracts and concessions out of Turkey, and a study of the railway history of the Balkans since the eighties of last century will throw many sidelights on the causes of the present war.—*Railway Gazette, London.*

Supply Trade News

The Western Electric Company has opened a new retail store in New York City at 105 West 40th street.

The Mark Manufacturing Company, Evanston, Ill., will commence the construction of a steel mill at Indiana Harbor, Indiana, immediately, at a cost of $5,000,000.

Arthur A. Frank has been elected vice-president of the Standard Railway Equipment Company, and hereafter will have full charge of the St. Louis office.

The Burroughs Adding Machine Company announces the removal of its New York office and district headquarters to the new Astor House building, 217 Broadway.

William P. Harper, chief of the purchasing department of the Allis-Chalmers Manufacturing Company and president of the Northwestern Manufacturing Company, Milwaukee, died of apoplexy on May 27.

The Standard Underground Cable Company has recently opened a new branch office at 704 Wilkins building, Washington, D. C., with Mr. Edward Kerschner, formerly with the Philadelphia office, in charge.

W. B. Dickson has been elected second vice-president of the Midvale Steel & Ordnance Company. This is a new office. Mr. Dickson has resigned from his position as secretary, but will continue as treasurer. He has been succeeded as secretary by D. B. Gehley, now secretary of the Cambria Steel Company.

Henry M. Shaw, formerly eastern representative of the Gardner Machine Company, Beloit, Wis., has become associated with Sherritt & Stoer Company, Inc., 603 Finance building, Philadelphia, and will represent the company in connection with its regular line, giving special attention to the Gardner company's products.

The Franklin Institute has awarded its Elliott Cresson Gold Model to Dr. Robert Gans, of Pankow, near Berlin, Germany, for Permutit. Permutit is a gray-colored, flaky substance, prepared by fusing together alumina, silica, and an alkali carbonate. It is used for softening water. When the Permutit has been exhausted of its sodium, it may be regenerated with a solution of sodium chloride (common salt). Chemical experiments have shown that the Permutit may be exhausted of its sodium and regenerated a large number of times with but little loss in weight. The Permutit filters are widely used in Germany and France, and are rapidly coming into use in England and the United States.

On May 25, a special meeting of the stockholders of the Pyle-National Electric Headlight Company was held at Jersey City, N. J., for the purpose of changing the name of the company to the Pyle-National Company. The change was made principally because the company is now manufacturing and selling several other devices besides electric headlights, among them the Young valve and valve gear, and that its business in these other lines is growing so rapidly that it is no longer distinctively a headlight company.

The American Manganese Steel Company, Chicago, Ill., announces that it has purchased the plant of the Brylgon Steel Casting Company, at New Castle, Del., a large, up-to-date steel foundry having a monthly capacity of approximately 400 tons of steel castings. The American Manganese Steel Company will now have two plants at New Castle, Del., and one plant at Chicago Heights, Ill. The newly acquired plant is being rapidly converted into a manganese steel foundry, and is expected to be in operation by July 15.

The A. M. Byers Company, Pittsburgh, makers of genuine wrought iron pipe, have leased for a term of years the plant of the Susquehanna Iron Company at Columbia, Pa., comprising the Columbia works and the Susquehanna works. The lease was made from W. W. Griest and associates, who have controlled the mills for some years. The Susquehanna works consist of a puddle mill with 32 single furnaces and equipment of

squeezers and muck bar mill. It will make puddled iron for the Columbia mill, which also contains a puddling plant of 28 single furnaces, an 18 in. skelp mill, on which will be rolled iron skelp from 4¼ in. up to 15 in. wide, and also a 10 in. mill, on which will be rolled iron skelp 1 11/32 in. up to 7⅞ in. wide. The pipe mill at Columbia contains one buttweld and one lapweld furnace. It is equipped to make 70,000 to 75,000 tons a year of ¼ in. to 12 in. iron pipe, of which about 25,000 tons will be buttweld and 45,000 to 50,000 tons lapweld. Forge iron for its puddling plants at Susquehanna and Columbia will be furnished from the Byers blast furnace at Girard, Ohio, which also furnishes forge iron for its South Side mills, and the same standard of quality and care in manufacture which characterizes all of the Byers mills will be strictly maintained.

William G. Pearce, recently elected president of the American Brake Shoe & Foundry Company, was born at Marietta, Ohio, on June 11, 1859. He first entered railway service in August, 1877, as a clerk in the office of the controller of the Missouri, Kansas & Texas at Sedalia, Mo. He was later promoted to bookkeeper and chief clerk in the same office and in August, 1879, left that road to take a clerical position in the auditing department of the Northern Pacific. He was successively promoted to assistant express auditor, assistant auditor of disbursements and auditor of disbursements in the same department, and in February, 1890, was appointed to general purchasing agent. From May, 1892, to September, 1896, he was assistant general manager of the same road, and when the Northern Pacific was reorganized on the latter date, he was transferred to Tacoma, Wash., as assistant general superintendent. From August, 1900, to July 1, 1901, he was assistant to the president of the Northern Pacific, the Seattle & International, and the Washington & Columbia River, at the same time being general manager of the Seattle & International. From July, 1901, to March, 1902, he was general manager of the Northern Pacific, leaving railway service at the end of that time to become second vice-president of the Griffin Wheel Company. On June 5, 1905, he was also made general manager of this company, with headquarters at Chicago. He left the Griffin Wheel Company on November 22, 1910, to become vice-president of the American Brake Shoe & Foundry Company, the position he held up to the time of his election as president on May 17. He will continue to have headquarters at New York City.

TRADE PUBLICATIONS

PAINT.—The Sherwin-Williams Company, Cleveland, O., has issued an interesting illustrated booklet of 52 pages in commemoration of the company's fiftieth year of business, compiled as a record of the important events in the company's history. It contains articles by various officers and is illustrated with photographs of the plants and officers at various periods.

BUMPING POSTS.—The Railway and Traction Supply Company, Chicago, has issued a 56-page catalogue illustrating installations of the Hercules steel bumping post, the Little Giant bumping post, the Weatherson nut lock and the Wyoming vacuum track sander. One interesting feature is the account of the special Hercules bumping posts installed on the Panama canal locks for the towing locomotives.

PRESSED STEEL CONSTRUCTION.—The Trussed Concrete Steel Company, Youngstown, Ohio, has issued a 24-page booklet, describing the Kahn pressed steel joists and studs with Hy-rib for floors, roofs, walls and partitions. This book describes in detail and illustrates the methods of construction for which this material is adapted. It also contains a number of photographs of installations and of methods of application.

HOPPER DOOR MECHANISM.—The United States Metal & Manufacturing Company, New York, has recently issued a folder descriptive of the Dunham hopper door device. The Dunham mechanism gives a positive lock. In locking, the oscillating point or upper link pin of the shaft arm passes beyond the pivotal point or point of support of the shaft arms, the door connecting links resting on a stop when the oscillating point has reached a given distance beyond the pivotal center. The resultant pull is hence below or beyond the point of support, and the greater the load applied to the doors the more positive the lock. The folder has half-tone and line illustrations showing the mechanism applied to gondola and self-clearing hopper cars.

Railway Construction

CALIFORNIA & OREGON COAST.—This company has practically completed a line from Grant's Pass, Ore., to Waters Creek, a distance of 15 miles, and is planning to extend the road 25 miles further, to Waldo. The location survey of the projected line has not yet been completed. Robert E. Twohy, Box 764, Portland, Ore., president; George W. Boschke, 603-604 Hobart Bldg., San Francisco, chief engineer; P. B. Delano, general manager, Grant's Pass, Ore.

CHESAPEAKE & OHIO.—According to press reports this company will build an extension from Man, W. Va., south to Gilbert, about 10 miles.

GANANOQUE & ARNPRIOR.—The Ontario legislature has extended the time in which to build a projected railway from Gananoque, Ont., north to Arnprior, about 80 miles, with branches from Morton to Lyndhurst, and from a point on the proposed line to Ottawa. The company has been given authority to use steam, electricity or other motive power. Chrysler & Higgerty, Ottawa are solicitors for applicants.

LOCKPORT RAILWAY.—Incorporated in Nova Scotia to build a railway, it is said, from Lockport, N. S., north to a junction, with the main line of the Halifax & Southwestern, four miles. Residents of Lockport are back of the project.

MEDFORD, (ORE.) RAILROAD.—The special election held at Medford, on May 26, on amending the city charter to allow for the issuance of $300,000 in railroad bonds, resulted in an affirmative vote of 1,331 to 295. The bonds will be floated to aid in the construction of a standard gauge railroad into the Blue Ledge mining district. (May 26, p. 1159.)

MONONGAHELA VALLEY TRACTION.—A contract has been awarded by this company to Keely Brothers, Clarksburg, W. Va., it is said, for building an extension along Limestone Creek. The cost of the work will be about $18,000.

NEW YORK SUBWAYS.—The New York Public Service Commission, First district, has awarded contracts for work on the following sections: For building Section No. 2 of Route No. 8, a part of the Fourteenth Street-Eastern subway, to the Degnon Contracting Company, at $1,972,349; for Route No. 31, the Livonia avenue elevated extension of the Eastern Parkway subway in the borough of Brooklyn, to Dennis E. Conners, at $1,376,122, the lowest bidders in each case.

The New York Public Service Commission, First district, has awarded the contract for construction of station finish on Sections Nos. 7 to 11 inclusive of Route No. 5, the Lexington avenue subway in the borough of Manhattan, to John B. Roberts, at $278,182, the lowest bidder. Bids were also opened recently for the construction of station finish on Sections Nos. 12 to 15 of Route No. 5, A. W. King & Company being the lowest bidders, at $316,000. This contract will probably be awarded at once.

RED LAKE NORTHERN RAILWAY & CONSTRUCTION COMPANY.—According to press report this company has been incorporated in Minnesota, with $150,000 capital, to build from Alida, Minn., north, past the west end of Red Lake, to a point on the Canadian boundary at or near Lake of the Woods. The plans also call for building from Alida, south, past Itasca State Park. The incorporators include J. J. Opsahl, G. H. French and A. M. Bagley, Bemidji, Minn.

ROSEBURG (ORE.) LINE.—The election held at Roseburg, Ore., on May 22, resulted in a vote of 651 to 94 in favor of issuing $300,000 in bonds for the construction of a railroad into an adjacent timber belt, 24 miles. (May 26, p. 1159.)

SEATTLE, PORT ANGELES & WESTERN.—Grant Smith & Co., Seattle, Wash., have a contract for a nine-mile extension of this road.

TORONTO, HAMILTON & BUFFALO.—A grading contract has been let to Fitch & Douglas, Dunnville, Ont., it is said, to build the extension from Dunnville to Port Mackland, 3.12 miles. The tracklaying and other work will be carried out by the company's forces. (December 31, p. 1262.)

RAILWAY STRUCTURES

ASHEBORO, N. C.—The Norfolk Southern has bought additional property to provide necessary freight facilities at Asheboro and expects to build a warehouse and install necessary tracks to serve same. The facilities of the Southern Railway, which the Norfolk Southern has been using in Asheboro, now prove to be inadequate.

BREWSTER, OHIO.—The Wheeling & Lake Erie has commenced the construction of a two story frame, cement stucco railroad Y. M. C. A. building, to cost about $40,000. The building will be L-shaped, 93 ft. by 99 ft. on the long side, and will rest on a hollow tile foundation. The work is being done by company forces.

CAIRO, ILL.—The Illinois Central is preparing plans for a one story brick extension to its freight house, 150 ft. by 40 ft.

COLUMBIA, PA.—Contracts have been let by the Pennsylvania Railroad for a bridge to be built over Oil Creek on the Western, New York & Pennsylvania Railroad, as follows: For the foundation to the Vedder Construction Company, Delevan, N. Y., and for fabricating the steel superstructure to the Phoenix Bridge Company, Philadelphia, Pa. There will be three half through girder spans, each 96 ft. long, and additional girders will be laid for second track on the bridge. The work calls for 220 tons of steel and the construction of 440 cu. yd. of concrete; the estimated cost of the improvements is $29,100. Contracts have been let for all the work except for the erection of the superstructure, for which bids will be received by George B. Beale, superintendent of the Buffalo division, Buffalo, N. Y.

EAST ST. LOUIS, ILL.—The Illinois Central is preparing plans and specifications for a brick freight house, 1,050 ft. by 40 ft., 400 ft. of which will have two stories.

FOND DU LAC, WIS.—Gaffin and Gehri of this city have the contract for remodeling the Chicago & North Western passenger station. (May 5, p. 1018.)

KINSTON, N. C.—An order has been issued by the Corporation Commission authorizing a change of site for the union passenger station to be built soon at Kinston at a cost of $30,000. The Chamber of Cemmerce, the Atlantic Coast Line and the Norfolk Southern asked that the station be built at Caswell street, the present junction of the two railroads, instead of as formerly ordered at Gordon street.

LA GRANDE, ORE.—The Oregon Washington Railroad & Navigation Company has awarded the contract to the M. J. Hursen Construction Company of Seattle, Wash., for the construction of a nine-stall, brick and frame roundhouse, to cost about $40,000. (May 12, p. 1060.)

MATTOON, ILL.—The Illinois Central is preparing plans for a two-story, brick and concrete passenger station, 36 ft. by 150 ft., with a tile roof. The building will cost about $50,000.

NEW YORK.—The New York Central has given a contract to the Terry & Tench Company for the steel required for extending Vanderbilt avenue northward, on a viaduct over the Grand Central Terminal yards from Forty-eighth street to Forty-ninth. The avenue is to be extended from its present northern end at Forty-fifth street to Forty-ninth street, and this contract is one step toward that result.

ROCKY MOUNT, N. C.—The Atlantic Coast Line has let a contract to D. J. Rose, Rocky Mount, for remodeling the waiting room and installing additional facilities in the brick passenger station at Rocky Mount. The work will cost about $7,600.

TACOMA, WASH.—The Chicago, Milwaukee & St. Paul is constructing an extension to its docks, 500 ft. by 175 ft. The extension will be a timber structure with a roof covering and will cost about $200,000. The work is being done by company forces.

TAYLORVILLE, ILL.—Work is well under way on the freight depot and office building of the Chicago & Illinois Midland. It will be a steel-frame, brick and concrete structure. The company is also constructing a new roundhouse and shops, which are expected to be finished by September 1, at a cost of $70,000.

TIMMINS, ONT.—The Temiskaming & Northern Ontario recently opened bids for building a new brick station at Timmins. The company may ask for new bids for this structure as certain changes are contemplated in the type of construction.

Railway Financial News

BOSTON & MAINE.—Holders of more than 97 per cent of the notes have agreed to an extension to July 17, and this extension has therefore been declared effective.

CHICAGO & MILWAUKEE ELECTRIC.—A plan for the reorganization of this company is to be submitted in the near future to the Public Utility Commissions of Illinois and Wisconsin. A first mortgage securing $10,000,000 5 per cent bonds is provided for in the plan, of which $4,500,000 is to be issued. The entire equity in the property will be divided into 165,000 shares, of which 45,000 will be represented by Illinois participation certificates, 60,000 by Wisconsin participation certificates and the remaining 60,000 by common participation certificates.

PERE MARQUETTE.—A reorganization plan is to be submitted to the Michigan railroad commission. The present face value of securities outstanding against the property, including floating debt and receiver's certificates, is $114,439,563. The plan provides for raising $16,000,000 cash and the total securities to be issued or left outstanding under the plan, including those necessary to raise the cash, will have a face value of approximately $105,000,000. Fixed charges will be reduced from $4,159,190 to $1,678,085. The only securities to be left undisturbed are the $2,870,000 Pere Marquette collateral 4 per cent bonds and the $3,000,000 Lake Erie division collateral 4½ per cent bonds.

ST. LOUIS & SAN FRANCISCO.—The Public Utilities Commission of Missouri has taken under advisement the latest reorganization plan proposed for the St. Louis & San Francisco, involving the validity of a voting trust, which will subsequently be presented to the Supreme Court of the state for final action. B. F. Yoakum is on record in a letter in which he states that he is unalterably opposed to a voting trust that is not based on the voluntary action of the stockholders parties to it; but that if the plan now before the state commission is approved in a manner to leave to any stockholder the right to contest its validity, he will not object.

The Wall Street Journal says in regard to the reorganization of the St. Louis & San Francisco:

"Failure to approve the voting trust provision of the plan is not a serious matter. In fact, it is believed that this does not come under the Missouri Commission's jurisdiction and the Supreme Court will be called upon to decide this question. It is expected therefore that the reorganization will be finally consummated and that the new company will start business by September 1, next. The new company will be launched under perhaps the most auspicious conditions in the 'Frisco history. The company is doing a record business on the most economical transportation basis ever reported, and showing earnings of substantial proportions in excess of fixed charge requirements on the contemplated reorganized basis. Surplus for the fiscal year, in the face of an estimated increase of $2,350,000 in maintenance expenditures for twelve months, will be $1,500,000. It is evident, therefore, that if the management had chosen to pursue last year's maintenance program this fiscal year, the surplus earnings could be made to show $3,500,000 after fixed deductions."

ST. LOUIS, IRON MOUNTAIN & SOUTHERN.—The suit brought by the trustees of the will of Jay Gould for $1,741,000 due on Texas & Pacific notes, endorsed by the St. Louis, Iron Mountain & Southern, has been dismissed by Judge Hand on the ground of lack of jurisdiction.

SOUTHERN PACIFIC.—The Railroad Commission of California has granted the application of the Southern Pacific for approval of the issuance of $5,100,000 face value of equipment trust notes in part payment of new equipment costing $6,018,470.

WABASH.—J. L. Replogle has been elected a director of this company.

WESTERN PACIFIC.—Judge Dooling of the United States district court at San Francisco has fixed $18,000,000 as the upset price for the sale of the Western Pacific in the foreclosure suit brought by the Equitable Trust Company of New York.

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THIS and all subsequent issues of the *Daily Railway Age Gazette* published in connection with the 1916 meetings of the Master Car Builders' Association and the American Railway Master Mechanics' Association are copyrighted by the Simmons-Boardman Publishing Company, publishers of the *Railway Age Gazette* and the *Railway Mechanical Engineer*, and all persons are hereby warned against making unauthorized use of any of the contents of *The Daily*, whether reading matter or illustrations.

From year to year we have incurred much expense for the purpose of furnishing our readers with early, complete and properly edited stenographic reports of the proceedings of the conventions of these associations. Some other publications have appropriated large parts of these edited reports of the proceedings and republished them without credit to this paper. We have copyrighted all of the reading pages of *The Daily* for the purpose of stopping this practice.

We desire in this connection to disavow any desire or purpose to interfere with the publication or use by the associations or their members of either their own reports of the proceedings, or of the reports made by the *Daily Railway Age Gazette*. So far as the proceedings of the convention are concerned, our copyright covers them only as they are reported by the *Daily Railway Age Gazette*. And the associations and their members individually are hereby authorized to make any use they desire of our reports, except that they must not be republished without the express permission of the Simmons-Boardman Publishing Company in any publication or periodical except those issued by the Master Car Builders' Association or the American Railway Master Mechanics' Association.

Improvements on the Pier

The officers of the Railway Supply Manufacturers' Association and the manager of the Million Dollar Pier are to be congratulated on the improvements which have been made in the arrangement of the exhibits, as noted elsewhere, and also in the scheme of decoration. These add greatly to the attractiveness of the exhibit, and will also contribute to the comfort and convenience of the visitors, particularly in the case of either stormy or very hot weather. Never has the exhibit presented such a finished, businesslike appearance. The refinishing of the inside of Convention Hall and the doing away with the white ceilings and walls will prevent the glare caused by the reflection of the water, which has been rather unpleasant in past years. Another improvement which will be greatly appreciated is the relocation and enlargement of the lavatories.

Freight Car Orders in 1916

When the Master Car Builders' Association met last year optimism was felt only by optimists, whereas now even the pessimists are optimistic. The heavy buying of freight cars which characterized the latter months of 1915 did not begin until October, and in June there were few who could foresee the boom that occurred. The buying of freight cars has continued, although with a little abatement, almost to the present time, so that the orders for cars reported up to the end of last week since the first of the year reached a total of 51,351 as compared with only 28,853 in the first five and one-half months of 1915. It may be of interest to give the totals of orders placed by the railroads of the United States and Canada in successive months of 1915 and 1916.

	1916	1915
January	14,613	3,300
February	9,323	4,385
March	14,233	1,188
April	7,228	1,000
May	4,154	19,080
June (first two weeks)	1,800	0
	51,351	28,853

The outstanding feature of the equipment market at the present time continues to be the high price of steel. It is having a dampening effects on the amount of orders for new cars, and this at a time when the railroads need cars and have money to pay for them. Some roads are avoiding paying the high prices of steel by buying all-wood cars, the North Western having ordered 1,000 wooden underframe box cars; the Illinois Central 300 wooden underframe stock cars, and the Southern Railway a large quantity of wooden underframe cars of various types.

The Cost of Material

The members of the two leading mechanical associations do not need to be told of the rapid increases in the past few years in the cost of the material that enters into car and locomotive construction. They are all familiar with these increases, generally from sad experience. There is no probability of any immediate appreciable decrease in material prices and it behooves railway officers to take all possible steps toward the conservation of material. One of the possibilities in this

connection is the education of employees as to the value of the material which they use. To a great many railway employees the material which they handle in various ways during a working day represents little or no value in money and even if they do recognize that material costs money, to them "the railway is rich." There are numbers of expensive parts which can very easily be destroyed or placed in a condition which makes them unsuitable for use simply by careless handling and it does not take very many of such parts, destroyed or sent back for repairs, to run into a considerable amount of money. A great deal can be accomplished by educational campaigns among employees in general and there are particularly promising possibilities for work in this connection by apprentice instructors. The idea of economy, if impressed on the mind of a boy who is serving his time as an apprentice, will be likely to take a firm hold and develop habits of care in handling and using material which will be of the utmost value to himself and his railway when he finishes apprenticeship.

TIPS TO EXHIBITORS

AN exhibit at the Atlantic City conventions may do more harm than good if it is not properly handled. For instance, it is mighty bad judgment to size up a visitor and then proceed to ignore or neglect him because he is not known or his appearance does not indicate that he is a man of importance. One of the biggest mechanical department officers at the convention last year was much disgusted because when he stopped at one of the exhibits which he particularly wished to investigate the group of supply men were so busy chatting and telling stories that they found it inconvenient to give him any attention. A quiet investigation later developed the fact that the company making the exhibit had had considerable correspondence with the road which the officer represented and that it was interested in the device to the extent of asking the officer to make a particular study of it during his attendance at the convention. It would be interesting to know just what report he made when he returned home.

The purpose of an exhibit is to attract the attention of railroad officers and give them a clearer conception of the device or equipment than can be conveyed by written or printed matter. It costs a considerable amount of money to get exhibits to Atlantic City and place them on exhibition, and this may all be wasted by not having competent representatives in attendance when the visitors stop to look over the exhibit. It hardly seems possible that exhibitors would allow this to happen, and yet not once but several times last year the fact that some supply companies were represented, part of the time at least, by incompetent help was commented on by railroad men in talking with members of the editorial staff of the *Daily*. One officer who religiously attends all of the technical sessions and has considerable committee work to look after during the conventions, finds that the best opportunity he has of examining the exhibits is immediately after the adjournment of the meeting while he is passing along the pier to his lunch. Unfortunately, however, he finds that at this time the exhibit spaces generally are deserted. It would not be so bad if he were an exception to the rule, but close observation leads us to believe that many other railroad officers are like-minded. Most railroad officers are early risers when they are at home and it is not unusual to find several of them on the pier long before the average exhibitor turns up in the morning. Several exhibitors have noticed this and awakened to the advantages of having an early breakfast and getting to their booths well in advance of the scheduled time of the meeting. An exhibit at Atlantic City is strictly a business proposition and exhibitors can well afford to give it the same thought and attention that they would any other important development in the extension of their business relations with the railroads.

Another point that has been called to our attention is in the matter of names. It is the business of the supply men to remember the railroad men with whom they talk. The railroad man, however, cannot at all times exactly place every supply man he has met, and frequently it happens that conversations are carried on without the railroad man knowing with whom he is talking, nor the company represented. It would, therefore, be well for the supply men to be sure that they are known to men with whom they converse.

RETRENCHMENT AS AFFECTING EQUIPMENT

A YEAR ago the railroad companies were just completing what for many of them was the most trying year in their recent history. The annual reports for the fiscal year ended June 30, 1915, throw some interesting light on the policy pursued by different managements in regard to addition to and repair of equipment. Taking, for sake of illustration, half a dozen roads, all but one hard hit by the decrease in gross earnings, it is worth while reviewing briefly the course that was pursued by the managements.

The Northern Pacific lost 9 per cent in freight revenue and 13 per cent in passenger revenue. The management retired 1 locomotive and bought 5. The net increase in the number of freight cars was 814, or 1.66 per cent. There was $7,317,000 spent on maintenance of equipment, a decrease as compared with the previous year of $1,121,000, or 13 per cent.

The Baltimore & Ohio lost 7 per cent in freight revenue and 12 per cent in passenger revenue. The management did not retire any locomotives, and bought 34. There was a net decrease of 1,958 in the number of freight cars or two per cent. The amount spent on maintenance of equipment was $16,003,000, a decrease as compared with the previous year of $1.147,000.

The Southern Railway lost 11 per cent in freight revenue and 15 per cent in passenger revenue. The management retired 42 locomotives and bought 45, and retired 3,955 freight cars and bought 4,124, making a slight net increase in the number available. There was spent on maintenance of equipment $10,691,000, or $1,423,000 (12 per cent) less than in 1914.

The Louisville & Nashville lost 14 per cent in freight revenue and 16 per cent in passenger revenue. The management retired 14 locomotives and bought 35, and retired 1,865 freight cars and bought 2,182, a net increase of 317, or less than one per cent. There was $10,311,000 spent on maintenance of equipment, a decrease of $1,929,232, or 16 per cent.

The St. Louis Southwestern lost 15 per cent in freight revenue and 22 per cent in passenger revenue. The management retired 1 locomotive and made no additions, and retired 220 freight cars, built 107 and bought 2,120, a net increase of 2,047 or 18 per cent. There was $2,076,000 spent on maintenance of equipment, a decrease of 22 per cent.

The Lehigh Valley gained 3 per cent in freight revenue and lost 16 per cent in passenger revenue. There was a net decrease in locomotives available for service of 2, and a net decrease in freight cars available for service of 621, or a little over one per cent. There was $8,207,000 spent on maintenance of equipment, an increase of 7 per cent.

The policy as regards the purchase of new equipment of these six roads was typical of the general situation with two exceptions. The considerable increase in the number of cars available on the St. Louis Southwestern was due to a peculiar set of local conditions which at the end of the previous year and beginning of the 1915 fiscal year made the necessity for adding freight cars a circumstance not typical

of roads in other parts of the country. The other exception is the purchase of heavy power by the Baltimore & Ohio. This purchase was made as part of a general and successful effort to make a large reduction in transportation expenses.

The retrenchment in maintenance of equipment expenses is typical of American practice. It is not theoretically economical, but the question was not one of theory but of practicability. The fact appears to be that American railroad managements will drastically reduce maintenance of equipment expenditures at a time of falling gross revenue, notwithstanding the fact that repairs are cheaper and more economical to make at such a time than at a time of large traffic and revenues such as that which the railroads are now experiencing.

NEW DEVICES EXHIBITED

NOT so many years ago the common practice in technical journals was to favor the advertisers with so-called write-ups in the editorial columns. These were all well enough where the equipment or devices were new, because railway officers are constantly on the lookout for equipment and methods that will help to overcome the difficulties with which they have to contend and which will increase efficient production. The abuse was that some of the devices were described periodically, regardless of their newness, and too often sufficient care was not given in preparing the articles; often, therefore, they had no news value and simply crowded out more important material.

A number of years ago the *Daily* adopted the policy of describing only those devices which had not previously been described in the *Railway Age Gazette*. In 1914 this policy was further restricted to describing only those new devices which were actually exhibited at the conventions and had not previously been described in the *Railway Age Gazette*. In soliciting the material and preparing the articles the editors used the list of exhibitors furnished by the secretary of the Railway Supply Manufacturers' Association and no attempt was made to determine whether they were advertisers or not. For several years it has also been the practice to assign the preparing of these articles to men specially well fitted for the work, who give it the same study and attention as is given to any other portion of the paper. Strange to say, although all of the exhibitors were urged to send us data as to new exhibits, some of them did not respond, apparently misunderstanding the intent of the invitation which was extended to them. These improvements met with such cordial reception on the part of railroad officers that we were inspired the following year, 1915, to make an even greater effort to get together complete information concerning all of the new devices and equipment exhibited.

A couple of months ago we asked a large number of our friends as to just what practical use they made of the *Dailies* and how in their opinion they could be made still more effective. So many referred to the help which they had received from the section devoted to the description of new exhibits that this year we have made a still greater effort to have every exhibitor furnish us with data concerning new devices. Indeed, a continuous campaign was conducted for several weeks prior to the conventions. The results will be seen in the New Devices section of the *Dailies*. Moreover, we have prepared brief references to all of the new devices of interest to car and motive power men which have been described in the *Railway Age Gazette* and the *Railway Mechanical Engineer* since last June and which are on exhibit. Those of special interest to car department officers and also of a general nature will be found grouped together on another page of this issue, while those of special interest to motive power men will be noted in next Monday morning's *Daily*.

PROGRAM FOR THE WEEK

MASTER CAR BUILDERS' CONVENTION

WEDNESDAY, JUNE 14, 1916

MORNING SESSION—9.30 A. M. TO 1.30 P. M.

Address by the President	9.30 A. M. to 10.30 A. M.
Reading of the minutes of the last meeting	10.30 A. M. to 10.35 A. M.
Report of Secretary and Treasurer	10.35 A. M. to 10.50 A. M.
Assessment and announcement of annual dues; appointment of committees on correspondence, resolutions, obituaries, etc.	10.50 A. M. to 11.00 A. M.
Election of auditing committee	11.00 A. M. to 11.05 A. M.
Unfinished business	11.05 A. M. to 11.10 A. M.
New business	11.10 A. M. to 11.20 A. M.
Discussion of reports on:	
Nominations	11.20 A. M. to 11.30 A. M.
Standards and recommended practice	11.30 A. M. to 12.00 M.
Train brake and signal equipment	12.00 M. to 12.30 P. M.
Brake shoe and brake beam equipment	12.30 P. M. to 1.00 P. M.
Car wheels	1.00 P. M. to 1.30 P. M.

AFTERNOON SESSION—3 P. M.

The executive committee decided that it would be best to have a session devoted exclusively to a discussion of the revision of the rules of interchange and that it form a part of the proceedings.

At this session the following reports of committees will be considered:

1. Arbitration committee.
2. Revision of prices for reinforced wooden cars.
3. Settlement prices for reinforced wooden cars.

ENTERTAINMENT

9.15 A. M.—Members and guests of the Master Car Builders' and Railway Supply Manufacturers' Associations will assemble on the porch of the Marlborough-Blenheim Hotel and march to the convention hall for the opening session. D. R. MacBain and the officers of the Master Car Builders' Association will lead the march.

10.30 A. M.—*Orchestral Concert.* Entrance Hall, Million-Dollar Pier.

3.30 P. M.—*Orchestral Concert and Impromptu Dancing.* Entrance Hall, Million-Dollar Pier.

9.00 P. M.—*Social Evening and Informal Dancing.* Special Feature. Ball Room, Million-Dollar Pier. Don Richardson New York Orchestra.

THURSDAY, JUNE 15, 1916

9.30 A. M. TO 1.30 P. M.

Discussion of reports on:	
Couplers	9.30 A. M. to 10.30 A. M.
Draft gear	10.30 A. M. to 11.00 A. M.
Safety appliances	11.00 A. M. to 11.15 A. M.
Loading rules	11.15 A. M. to 11.45 A. M.
Car construction	11.45 A. M. to 12.15 P. M.
Car trucks	12.15 P. M. to 12.45 P. M.
Train lighting and equipment	12.45 P. M. to 1.30 P. M.

ENTERTAINMENT

10.30 A. M.—*Orchestral Concert.* Entrance Hall, Million-Dollar Pier.

3.30 P. M.—*Orchestral Concert.* (Card party for Ladies.) Entrance Hall, Million-Dollar Pier.

9.30 P. M.—*Informal Dance.* Special Feature. Ball Room, Million-Dollar Pier. Don Richardson New York Orchestra.

FRIDAY, JUNE 16, 1916

9.30 A. M. TO 1.30 P. M.

Discussion of reports on:	
Tank cars	9.30 A. M. to 10.00 A. M.
Specifications and tests for materials	10.00 A. M. to 11.00 A. M.
Welding of truck sides and bolsters	11.00 A. M. to 11.30 A. M.
Unfinished business; reports of committees on correspondence, resolutions and such other committees as may be named during the convention	11.30 A. M. to 11.34 A. M.
Election of officers	11.45 A. M. to 1.30 P. M.

ENTERTAINMENT

10.30 A. M.—*Orchestral Concert.* Entrance Hall, Million-Dollar Pier.

3.30 P. M.—*Orchestral Concert and Impromptu Dancing.* Entrance Hall, Million-Dollar Pier.

9.30 P. M.—*Carnival Dance.* The program will contain the usual carnival features; streamers, horns, balloons, ticklers, whistles, fancy caps, etc. Special Features. Ball Room, Million-Dollar Pier. Don Richardson New York Orchestra.

SATURDAY, JUNE 17, 1916

ENTERTAINMENT

10.30 A. M.—*Orchestral Concert.* Entrance Hall, Million-Dollar Pier.

3.30 P. M.—Baseball; Master Car Builders vs. Master Mechanics. Inlet Park.

8.15 P. M.—*Theatre Party.* Million-Dollar Pier. Admission by badge only. No seats reserved.

SUNDAY, JUNE 18, 1916

ENTERTAINMENT

8.00 A. M.—Golf Tournament, Sea View Golf Club. (See special anouncement).

3.30 P. M.—*Sacred Concert.* Parlors of Blenheim Hotel. Don Richardson New York Orchestra.

BADGE LOST

Badge No. 3342 was lost, presumably on the pier on Monday night. The finder will confer a favor by returning it to O. B. Capps, Locomotive Stoker Company.

A MISTAKE IN THE OFFICIAL PROGRAM

An unfortunate mistake made the official program of the conventions say that the golf tournament Sunday would be held at the Sea View Club instead of on the links of the Atlantic City Country Club. It is hoped by the Entertainment Committee that no one will be seriously inconvenienced by the error.

AN INTERESTING ENTERTAINMENT FEATURE

The Entertainment Committee has announced a special feature for social evening at the ball room on the pier on Wednesday evening. The program will consist of alternate selections by the orchestra and the White and Blue Marimba Band. The Marimba is the national instrument in Central America and the company that is engaged at the pier is the largest group of these specialists that has made the world tour. The first band of marimba players, consisting of three performers, came to the Chicago Exposition in 1893. The second, consisting of four, came to the San Francsico Exposition last year. Those now entertaining on Young's Pier have been at the Hippodrome in New York all winter. This band, consisting of eight people, is said to be the largest that ever left Guatemala.

CARD PARTIES FOR THE LADIES

There will be card parties for the ladies on the exchange floor of the Marlborough-Blenheim Hotel on Thursday, June 15, and Tuesday, June 20. Play will start promptly at 3.30 o'clock. Those coming late may enter the game, by forming extra tables, but games that have been played will be counted as lost. The game will be euchre.

THE SPECIAL TRAIN FROM CHICAGO

Right on time was the M. C. B. and M. M. special train over the Pennsylvania road when it reached Atlantic City yesterday at 1.45 p. m. It was a 12-car train containing some 180 Chicago and western conventionites and was in charge of E. K. Bixby, assistant general western passenger agent. Chicago was left at 3 p. m. Monday and the trip was a pleasant one and without incident; in fact "a nice time was had by all."

ATTEND THE OPENING EXERCISES

The opening exercises of the Master Car Builders' Association will be held in Convention Hall at 9.30 o'clock this morning, and all the convention visitors, and particularly the ladies, are invited to attend. At 9.15 members and guests of the Association and of the Railway Supply Manufacturers' Association will assemble on the porch of the Marlborough Hotel and march to the convention hall. The march will be led by President D. R. MacBain and the other officers of the Master Car Builders' Association, and those attending the convention are especially requested to fall in line.

INFORMATION BUREAU, TICKET OFFICE AND POST OFFICE

An Information Bureau is located on the Pier adjoining the Registration Booth. In conjunction with this bureau, the Pennsylvania Railroad and the Philadelphia & Reading have established a local office where tickets and reservations may be secured. Information pertaining to all convention matters may be obtained at this bureau.

United States mail addressed in care of the Secretary's Office, Million Dollar Pier, Atlantic City, will be taken care of and distributed direct to the exhibitor's booths.

NOTICE TO EXHIBITORS

The exhibit committee has issued a notice to exhibitors, careful and full observance of which will be of service to all attending the conventions. It says:

"Keep your exhibit as neat as possible.

"Help your neighbor by not obstructing him.

"Signs and decorations are subject to the approval of the exhibit committee.

"Do not erect raised platforms without special permission.

"Crates and boxes and other packing materials will be removed by the association, and returned at the end of the convention.

"Do not engage men to sweep your booth, the association does it.

"Watchmen, except those provided by the association, not permitted on the pier between midnight and 6 a. m., except by special permission of the secretary and the pier management.

"Do not distribute advertising matter, nor give souvenirs on the pier.

"*Do not start to dismantle your exhibit until the close of the meeting on Wednesday, June 21.*

"A city ordinance prohibits throwing of papers or refuse matter on the beach or in the ocean; violation of this ordinance is subject to penalty or fine.

"The exhibit committee will at all times be ready to assist exhibitors in any way possible, and ask that complaints, if any, be registered promptly."

Railway Supply Manufacturers' Association
This Organization Is Responsible for the Remarkable Exhibit of Railway Appliances at the Conventions

Main or Entrance Hall, Million Dollar Pier

THE Railway Supply Manufacturers' Association is the largest of the railway supply associations and no one will dispute the statement that it is the most active. It has a membership of over 500 supply firms and its exhibit on the pier is attended by some 3,500 or 4,000 people, of which between 1,300 and 1,800 are representatives of supply concerns. The object of the association is, as stated in its constitution: "The advancement of the interests of its members as they are connected with the annual conventions of the Master Car Builders' and the American Railway Master Mechanics' Associations; to arrange for and have general charge of the exhibits made by its members before said conventions, and to promote friendly relations between its members and the members of said Associations."

In carrying out these objects, the association places the conduct of its affairs in the hands of a president, vice-president and secretary, an executive committee consisting of 12 members and the president and vice-president, and eight standing committees, namely exhibit, finance, badge, hotel, by-laws, entertainment, enrollment and transportation. The work of these committees was briefly outlined in one of last year's *Dailies*, June 9, page 1187.

Oscar F. Ostby
President

The association has been particularly fortunate in many ways this year. For one thing, the supply firms are nearly all exceedingly prosperous, and in a position to spend more than was advisable or possible a year ago. This has been shown in the larger number of exhibits and undoubtedly it will also show in a much larger and possibly a record registration. The officers of the association, with this spirit of coöperation, have outdone themselves. The pier itself is one example. It has been considerably improved. New piling has been driven under many of its parts; new booths have been installed and Acquarium Court is hardly recognizable, so great has been the improvement therein. The entertainment committee, too, is really trying to "get away" with something, for we are to have the base ball game once more. And further, all will agree that the officers had the right idea when they called for decorations exclusively of red, white and blue in the main hall.

The president of the association this year is Oscar F. Ostby, until June 1, general sales agent of the Commercial Acetylene Railway Light & Signal Company, New York. Mr. Ostby was born March 5, 1883, and received his education in the public schools of Providence, R. I. He was engaged in publicity work from 1901 to November, 1904, when he entered the employ of what was later the Commercial Acetylene Railway Light & Signal Company. Mr. Ostby has been very active in association work, not only in the Railway Supply Manufacturers' Association but also in the International Acetylene Association. He has been a director and vice-president of the latter association and in 1909-1910 served as its president. At present he is chairman of its legislative committee. As far as the Railway Supply Manufacturers Association is concerned Mr. Ostby was a member of the enrollment committee from 1908 to 1910. From 1910 to 1912 he was chairman of that committee. In 1913-1914 he was chairman of the badge committee and from 1912 to 1914 served also as a member of the executive committee. He was elected vice-president in 1914, being nominated for that position by petition, and in June, 1915, became the association's president.

R. S. M. A. Officers

Executive Committee Members and Committee Chairmen

J. H. Kuhns
Chairman, Hotel Committee

E. H. Walker
Vice-President

C. B. Yardley, Jr.
Chairman, Exhibit Committee

C. E. Postlethwaite
Chairman, By-Laws Committee

J. C. Currie
Chairman, Finance Committee

C. W. Beaver
Chairman
Enrollment Committee

G. E. Ryder
Chairman
Entertainment Committee

J. L. Randolph
Chairman
Transportation Committee

F. E. Beal

C. P. Cass

C. D. Eaton

C. F. Elliott

P. J. Mitchell

John D. Conway
Secretary-Treasurer

J. G. Platt

G. H. Porter

J. F. Schurch

E. H. Walker, the vice-president of the association is vice-president of the Standard Coupler Company, New York. He was born at Kingston, Ohio, December 10, 1871, and has had a rather varied railroad experience. For example, he was a clerk in the passenger department and later in the construction department of the Great Northern. He served for a while in the freight department of the Burlington and then in the accounting department of the Minneapolis, St. Paul & Sault Ste Marie of which he was at one time a traveling auditor. Later he entered the employ of the Bismark, Washburn & Great Falls (now part of the Soo Line) and was in charge of that road's traffic, accounting and operating departments. Mr. Walker entered the sales department of the Standard Coupler Company in February, 1905, and was elected to the vice-presidency in January 1910.

A sketch of the career of John D. Conway, the secretary-treasurer, appeared in the *Daily* of June 14, 1911, page 1344. The thing we must not forget about Mr. Conway is to draw attention to the picture appearing on a neighboring page in which a view is presented of his physiognomy "in the nude."

Executive Committee

The executive committee's 12 members, exclusive of the president and vice-president, are from seven geographical districts as follows: First district (New England States and Canada), one member—J. G. Platt, Hunt-Spiller Manufacturing Corporation, Boston, Mass. Second district (New York and New Jersey), three members—J. C. Currie, Nathan Manufacturing Company, New York; C. D. Eaton, American Car & Foundry Company, New York, and C. B. Yardley, Jr., Lubricating Metal Company, New York. Third district (Pennsylvania), two members—Philip J. Mitchell, Phillip S. Justice & Co., Philadelphia, Pa., and C. E. Postlethwaite, Pressed Steel Car Company, Pittsburgh, Pa. Fourth district (Ohio, Indiana and Michigan), two members—C. F. Elliott, Acme White Lead & Color Works, Detroit, Mich., and J. F. Schurch, Damascus Brake Beam Company, Cleveland, Ohio. Fifth district (Illinois, Wisconsin, Iowa and Minnesota), two members—Joseph H. Kuhns, Republic Rubber Company, Chicago, and George H. Porter, Western Electric Company, Chicago. Sixth district (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Kentucky and Tennessee), one member—Frank E. Beal, Magnus Metal Company, Atlanta, Ga. Seventh district (states west of the Mississippi river, including Louisiana, but excepting Iowa and Minnesota), one member—C. P. Cass, Westinghouse Air Brake Company, St. Louis, Mo.

Five of these twelve members will leave the executive committee at the close of the convention. The terms of four expire, these four being C. B. Yardley and J. C. Currie (second district), C. F. Elliott (fourth district), and Joseph H. Kuhns (fifth district). C. E. Postlethwaite (third district) retires because he has moved from Pittsburgh to New York, or out of the district from which he was elected.

There were four new members elected at last year's convention, J. G. Platt (first district), C. D. Eaton (second district), J. F. Schurch (fourth district) and C. P. Cass (seventh district). Brief sketches of these new members are given herewith:

J. G. Platt has been sales manager of the Hunt-Spiller Manufacturing Corporation, Boston, Mass., since June 1, 1912. He was born at Zanesville, Ohio, on February 11, 1874. His parents moved to Baltimore in 1879 and he was educated in the public schools of that city. He entered railway service when he was not quite 15 years of age as a messenger for the Baltimore & Ohio. In January, 1890, he became an apprentice in the locomotive department of the same road, later entering the drafting room as a locomotive draftsman in 1894. On February 1, 1901, he was transferred to Newark, Ohio, as chief draftsman of the Lines West but on December 20, 1902, he left the Baltimore & Ohio to accept the position of assistant to the master mechanic of the Erie at Jersey City, N. J. He was transferred to Meadville, Pa., April 1903, as engineer of tests On February 1, 1907, he left railway service and became master mechanic of the Franklin branch of the American Steel Foundries with which company he remained until June 1 of the same year when he accepted a position with the Hunt-Spiller Manufacturing Corporation as mechanical representative, later becoming sales manager as noted above.

Clark Dickerman Eaton, assistant to vice-president and sales manager of the American Car & Foundry Company, was born at Chapman's Quarries, Bethlehem, Pa., August 12, 1872. Upon completing his education in the public schools of Berwick, Pa., a preparatory school at Bethlehem and the University of Pennsylvania, Mr. Eaton entered upon his business career with the Jackson & Woodin Manufacturing Company, Berwick, Pa., manufacturers of railroad equipment and foundry products, and spent three years in the different departments of the plant. He later assumed clerical duties in the company's office and was finally associated with the sales department. Upon the formation of the American Car & Foundry Company the Jackson & Woodin interests entered the consolidation and Mr. Eaton was made assistant district manager of the Berwick plant. In 1907 he was transferred to New York and became sales agent of the company. This was followed in 1914 by his appointment as assistant to vice-president and sales manager.

John F. Schurch, or "Jack Schurch," as he is more familiarly known, holds the position of vice-president of the Damascus Brake Beam Company, Cleveland, Ohio. He is a graduate of the University of Minnesota, class of 1893. Immediately after graduation he entered the service of the Minneapolis, St. Paul & Sault Ste Marie, serving consecutively in the office of the auditor, that of the general superintendent and in the train and traffic departments, resigning finally in 1905, after having attained the position of chief clerk to the vice-president. He has since been engaged in commercial work in the railway supply business, and was associated for some years with the Railway Materials Company of Chicago. He has been vice-president of the Damascus Brake Beam Company since January, 1914.

C. P. Cass, southwestern manager of the Westinghouse Air Brake Company is a native Missourian. He began railroad service as a machinist apprentice for the St. Louis & San Francisco, later serving as a locomotive fireman for two and one-half years, and as an engineer for 15 years. In January, 1899, he entered the employ of the Westinghouse Air Brake Company as a mechanical expert. He was successively advanced to the positions of representative, assistant southwestern manager, and for past two and one-half years has served his company as district manager at St. Louis, in charge of the southwestern district.

Exhibit Committee

C. B. Yardley, Jr., manager of the railway department of the Lubricating Metal Company, New York, is chairman of this committee, the other two members being George H. Porter and J. G. Platt. A sketch of Mr. Yardley's career appeared in the *Daily* of June 10, 1914, and was brought down to date in the *Daily* of June 9, 1915, page 1190.

Entertainment Committee

Gilbert E. Ryder, assistant to vice-president of the Locomotive Superheater Company is the man who this year directs the production of the mechanical conventions seven-reel feature. We shall know better after the golf tournament and the championship base ball game who his stars are going to be. The other members of the entertainment committee are A. G. Bancroft, Standard Railway Equipment Company, New York; E. H. Bankard, Jr., Cambria Steel Company,

Chicago; W. H. Bentley, Mudge & Co., Chicago; B. A. Clements, Rome Merchant Iron Mill, New York; Don L. Clements, Pratt & Lambert, Inc., New York; C. W. Floyd Coffin, Franklin Railway Supply Company, New York; George W. Denyvan, Parkesburg Iron Company, Boston, Mass.; Dan Eubanks, Galena Signal Oil Company, Atlanta, Ga.; C. C. Farmer, Westinghouse Air Brake Company, Chicago; R. J. Faure; J. R. Forney, Ralston Steel Car Company, Baltimore, Md.; L. S. Hungerford, Jr., Peerless Rubber Manufacturing Company, Chicago; Langley Ingraham, Yarnall Paint Company, Philadelphia, Pa.; W. K. Krepps, Crucible Steel Company, New York, William T. Kyle, Okonite Company, New York; John M. Lammadee, Railway Review, Chicago; J. P. Landreth, Garlock Packing Company, Chicago; John D. McClintock, William Sellers & Co., Philadelphia, Pa.; F. V. McGinness, Edison Storage Battery Company, Orange, N. J.; H. E. Passmore, Grip Nut Company, Cleveland, Ohio; F. N. Roe, Carnegie Steel Company, Richmond, Va.; D. E. Sawyer, Illinois Steel Company, Chicago; C. C. Schumaker, Carborundum Company, Chicago; H. N. Scott, Griffin Wheel Company, Chicago; G. E. Spengler, Locomotive Superheater Company, Chicago, and Lucius B. Sherman, *Railway Age Gazette*, Chicago.

Gilbert E. Ryder, the chairman, has been assistant to vice-president of the Locomotive Superheater Company for a little over a year. He was born at Minneapolis, Minn., May 29, 1880. He was educated in the public schools, at Tabor Academy, Marion, Mass., at the University of Wisconsin and at the University of Illinois. He entered railway service as a special apprentice and was later machinist on the Chicago, Milwaukee & St. Paul. In 1909 he was appointed assistant mechanical engineer of the briquette division of the technologic branch of the United States Geological Survey. He was later a deputy smoke inspector for the city of Chicago in 1908 and from 1909 to 1911 was mechanical editor of the Railway Review. In 1911 he entered the service of the Superheater Company as representative, becoming in 1915 assistant to vice-president.

Transportation Committee

This committee is headed by J. L. Randolph, eastern sales manager of the Economy Devices Corporation, New York. The other members of the committee are: E. A. Averill, Locomotive Feed Water Heater Company, New York; Fred M. Ball, Glidden Varnish Company, Cleveland, Ohio; R. W. Benson, American Flexible Bolt Company, New York; J H. Craigie, Joseph T. Ryerson & Son, New York; A. N. Dugan, Bronze Metal Company, New York; K. J. Eklund, Pilliod Company, New York; R. J. Himmelright, American Arch Company, New York; A. S. Lewis, Chicago-Cleveland Car Roofing Company, New York; A. L. McNeill, Central Electric Company, Chicago; Albert MacRae, MacRae's Blue Book, Chicago; G. H. Peabody, Griffin Wheel Company, Chicago; R. R. Porterfield, Locomotive Superheater Company, Chicago; Joseph Sinkler, Economy Devices Corporation, Chicago; H. M. Wey, United States Metallic Packing Company, Chicago; J. W. Wilson, Kay & Ess Company, Dayton, Ohio, and L. S. Wright, National Malleable Castings Company, Chicago, Illinois.

John L. Randolph, the chairman, was born in Boston, Mass., August 25, 1878, attended the public schools and graduated from English High School in that city. He began his railroad career as a machinist apprentice in the Concord, N. H., shops of the Northern Railroad, now a part of the Boston & Maine. Subsequently he served this road in the capacity of machinist gang foreman, master mechanic, and superintendent of shops of Keene, N. H. In April, 1911, he accepted a position with the Franklin Railway Supply Company in the mechanical department and remained with that company until February 1, 1914, when he was appointed eastern sales manager of the Economy Devices Corporation.

Enrollment Committee

Charles W. Beaver of the Yale & Towne Manufacturing Company is chairman of this committee. The other members are: G. A. Barden, Chicago Pneumatic Tool Company, Philadelphia, Pa.; S. H. Campbell, Western Railway Equipment Company, St. Louis, Mo.; W. J. Fleming, Jr., Automatic Ventilator Company, New York; C. H. Gayetty, Quaker City Rubber Company, Philadelphia, Pa.; Arthur Haller, American Locomotive Company, New York; W. R. Hulbert, Goldschmidt Thermit Company, New York; E. A. Johnson, Duff Manufacturing Company, Pittsburgh, Pa.; S. Inglis Leslie, Leslie Company, Lyndhurst, N J.; L. D. Mitchell, Detroit Graphite Company, Detroit, Mich.; F. H. Smith, Gold Car Heating & Lighting Company, New York; J. A. Stevens, F. W. DeVoe & C. T. Raynolds Co., New York, and H. G. Thompson, Edison Storage Battery Company, Orange, N. J.

The chairman, Charles W. Beaver, is sales manager hoist department and export manager Yale products, of the Yale & Towne Manufacturing Company, New York. He was born in 1875 in Cuba, Ill., completed his schooling at Wesleyan University in 1898 and afterwards served in Cuba as Lieutenant 2d. Regt. U. S. V. Engineers during the Spanish-American war. Subsequently he assisted in the development of sanitation in the city of Havana, returning to New York and entering the employ of the Yale & Towne Manufacturing Company in 1900. During 1904 he was special representative for his company at the St. Louis exposition. Until 1910 he occupied the position of district manager for Pittsburgh, at which time he was sent as special representative to Europe and subsequently appointed directing manager of the Yale & Towne Company, London, and Yale & Towne, Ltd., Paris and Hamburg. In 1913 he was recalled to New York to occupy the position of sales manager hoist department and in 1915 was further appointed sales manager for Yale products in all export markets of the world.

Badge Committee

E. H. Walker, vice-president of the association, is also chairman of the badge committee. The other two members are: C. P. Cass and J. F. Schurch who are also members of the executive committee.

Committee on By-Laws

The chairman of this committee is C. E. Postlethwaite who is assisted by Frank E. Beal and C. F. Elliott, all three members being also members of the executive committee. A sketch of Mr. Postlethwaite's career appeared in last year's *Dailies* in the issue of June 9, page 1190. Mr. Postlethwaite was then manager of sales for the central district for the Pressed Steel Car Company at Pittsburgh, Pa. He has since been advanced to general sales manager at New York.

Hotel Committee

The chairman of the hotel committee is Joseph H. Kuhns, the other members being Philip J. Mitchell and C. D Eaton.

Finance Committee

J. C. Currie is chairman of the finance committee and J. F. Schurch and C. E. Postlethwaite are the other two members. All three are also members of the executive committee. Mr. Currie is with the Nathan Manufacturing Company, New York, and has been associated with that company for 20 years. He was born in Scotland, August, 1851. He came to the United States when he was 20 years of age and shortly afterwards entered the service of the Pennsylvania Railroad as a fireman, later being promoted to an engineman. As such he ran an engine in switching, freight and passenger service; during his last four years on the road, ending in 1896, he piloted the Congressional Limited. Since 1896 he has been with the Nathan Manufacturing Company and at present holds the position of special representative.

REGISTER FOR THE GOLF TOURNAMENT

Members of the M. C. B., M. M. and R. S. M. Associations, who intend to play in the golf tournament, Sunday, June 18, are earnestly invited to enter their names with the golf committee at their earliest convenience. Late entries, however, will be accepted at the first tee on the morning of the tournament.

The day's program will consist of two contests, run simultaneously; one an 18-hole medal play handicap, the other an 18-hole blind bogie event. Prizes will be presented to the four low score men in each contest.

The tournament will be held on the links of the Atlantic

The Golf Trophies

City Country Club, which has tendered the use of its clubhouse and grounds to members of the three associations upon payment of the usual greens fee. No entrance fee will be required for participating in the convention tournament.

Motor busses, free to registered members and guests, will leave the Marlborough-Blenheim hotel at short intervals for the Country Club, commencing at 7.45 A. M., returning at regular intervals between the hours of 1 and 6 P. M.

Please register with any of the members of the golf committee as early as possible. The committee in charge is as follows: E. H. Bankard, chairman, Cambria Steel Company; D. E. Sawyer, Illinois Steel Company; L. B. Sherman, Daily Railway Age Gazette; W. T. Kyle, Okonite Company, and B. A. Clements, Rome Merchant Iron Mill.

REGISTRATION

The enrollment committee began the work of registering attendants at the convention on Monday at two o'clock and was busy Monday afternoon and evening and all day yesterday from 9 a.m. to 9 p.m., except for the periods for lunch and dinner. For the remainder of the conventions the enrollment booth will be open the following hours:

	Morning.	Afternoon.	Evening.
Wednesday (14th)	9 to 1.00	2 to 6	7 to 8
Thursday (15th)	9 to 1.00	2 to 6	7 to 8
Friday (16th)	9 to 1.00	2 to 6	7 to 8
Saturday (17th)	9 to 12.00		7 to 8
Sunday (18th)	11 to 12.00	2 to 4	
Monday (19th)	9 to 1.00	2 to 6	
Tuseday (20th)	9 to 12.00	2 to 5	
Wednesday (21st)	9 to 11.00		

Registration for the Railway Supply Manufacturers' badges began on Monday at two o'clock and will be handled throughout the remainder of the conventions in the same manner as heretofore.

The regulations concerning registration will be strictly enforced. They are as follows:

M. C. B. badges (1 to 450) cost $1 each throughout the convention, issued personally to members only on their written request.

M. C. B. badges (500 to 949); no charge. To be handed personally to members only or on their written request. Good only beginning Saturday morning, June 17. The M. M. badge may be given out at the same time a man takes out his M. C. B. badge or special guest badge. A member of the Master Mechanics' Association who is not a member of the Master Car Builders' Association, is required to use a special guest badge at a cost of $1 prior to Saturday morning, June 17.

Special guest badges (1000 to 1799) cost $1 each until 9 o'clock Saturday morning, June 17, after which they will be free to railroad officers who are not members of the Master Car Builders' or Master Mechanics' Associations. Railroad employees who do not occupy positions sufficiently responsible to entitle them to special guest badges will be passed without charge through the door to view the exhibits.

Railroad ladies' badges (2000 to 2649 for railroad ladies only); cost $1 each until Saturday morning, June 17, after which hour they are free to guests of Master Mechanics' Association members. A railroad officer who is entitled to a special guest badge is also entitled to a railroad ladies' badge for his wife or daughter in accordance with the above rules governing charges.

The members of the committee have been instructed not to give out badges unless the owner himself is present or has sent a written letter authorizing the bearer to secure his badge.

THE BADGES

The badge committee has introduced a new feature this year in the form of some heroic size reproductions of the badges, 12 in. by 18 in. in size, displayed near the enrollment booth.

The M. C. B. and M. M. badges themselves are characterized by the prominence of the gold color. The M. C. B. badge is gold, white and royal blue. The M. M. badge is gold and

Railway Supply Manufacturers' Association Badge

M. M. Badge

M. C. B. Badge

black. The Railway Supply Manufacturers' Association badge is simple but attractive in design, one of the changes from last year's arrangement being the substitution of plain letters vertically arranged in place of the M. C. B. and M. M. monograms; another change is the omission of the words "Atlantic City." The colors on the men's badges are white, gold and royal blue, the lettering being in gold and the number in royal blue on a gold ground. The badges for the supply ladies are white; for the railroad ladies white and light blue.

The special guest badges are red, the complimentary men's badges white and red, and the complimentary ladies' badges white and yellow. Members of the various committees are designated by a colored ribbon attached to the badge. The colors used are as follows: white, "How Do You Do" committee; green, enrollment; red, entertainment, and yellow, transportation.

The "How do you do" badge is a new one this year. The color is white and the emblem indicates the bearer is a member of a large "introduction and get-together" committee for the purpose of promoting acquaintance and friendship among members, and particularly among the new members and the guests. Mrs. McBain and Mrs. Pratt have distributed the white ribbons among fifty ladies who will serve on this committee.

TRAP SHOOTING

The members and guests of the three associations who enjoy the sport of trap shooting, will find first-class facilities at the ocean end of the pier. Probably no other sport has grown so popular in the last 18 months as has trap shooting, and it is becoming just as fascinating for the ladies as for the men.

Arrangements have been made with the DuPont Trap Shooting School on the pier end whereby a round of 25 birds may be shot for $1.00. This includes guns, ammunition, birds and service. The city requirements necessitate the use of 20-gage guns at 12 yards rise. Any one desiring to use his own gun may do so. Experts are in constant attendance and give free instructions to amateurs.

Members should bear in mind that tickets for trap shooting should be secured at Hoffman's shooting gallery, on the Boardwalk, just north of the pier.

ROLLER CHAIRS

The Transportation Committee provides roller chairs for members and guests of the convention wearing official badges, from the following stations, between the hours indicated, from June 14 to June 21, inclusive:

The Pier	9.00 A. M.	to	6.00 P. M.
Marlborough-Blenheim	9.00 A. M.	to	6.00 P. M.
Traymore	9.00 A. M.	to	6.00 P. M.
Strand Hotel	9.00 A. M.	to	6.00 P. M.
Chalfonte Hotel	9.00 A. M.	to	6.00 P. M.
Chelsea Hotel	9.00 A. M.	to	6.00 P. M.
To all Entertainments on Pier	8.30 P. M.	to	10.00 P. M.

Unoccupied chairs may be stopped at any point on the boardwalk, except between the Marlborough-Blenheim and the Pier, and they may be used in either direction, but must be reported at the first checking station passed.

Convention chairs are not allowed to wait more than fifteen minutes. Any of Schill's chairs may be had after hours for continuous trip in any one direction, at the rate of 25 cents per person. Private chairs may be secured at special rates through the Transportation Committee.

BASE BALL GAME

The base ball game which was an important feature in the entertainment programs until a few years ago is to be reinstated this year. The game will be between the Master Car Builders' Association and the Master Mechanics' Association and will take place on the base ball grounds at City Park, Saturday afternoon.

The Master Car Builders' team, organized and managed by A. LaMar, master mechanic of the Pennsylvania Lines West, has never been beaten, and M. C. M. Hatch, supervisor of fuel service of the Lackawanna, has built up a team from the Master Mechanics' Association which holds the same distinction. With this record, there is certain to be a game no one can afford to miss.

Efficient umpires will be essential and, by special arrangements, the services of the two best in the world (according to the chairman of the entertainment committee) have been secured. Ernest Shakleford, manager of Young's Million Dollar Pier, will judge the high ones, and Frank Edmunds, sales manager of the Dressel Railway Lamp Works, will watch the low ones. (The throwing of pop bottles and other refuse will not be tolerated, and fans are specially requested not to call the umpires "Mutt and Jeff.")

Street cars will run from the intersection of the board-walk and South Carolina avenue to City Park. The cars will be ready at 3 o'clock, and will take the party from this point to the park, returning to South Carolina avenue and the board-walk after the game is over. Admission to the grounds will be by badge only.

MASTER CAR BUILDERS' REGISTRATION

Akans, E. L., M. M.; Traymore.
Akans, Geo., M. M.; So. Ry.; Traymore.
Arp, W. C., S. M. P.; Vandalia; Blenheim.
Beaghen, Thomas, M. C. B.; Union Tank Line; Traymore.
Bell, Robert W., G. S. M. P.; Ill. Cent.; Dennis.
Bilty, C. H., M. E.; C. M. & St. P.; Traymore.
Borrowdale, J. W., S. C. D.; I. C.; Brighton.
Boyer, Chas. E., C. C. I.; Penna.; Runnymede.
Burns, T. J., S. R. S.; M. C.; Traymore.
Billingham, R. A., M. S.; Tenn. Cent.; Lexington.
Blake, R. P., M. M.; N. P.; Traymore.
Boutet, H., C. C. I.; Lines in Cincinnati.
Bowersox, C., M. M.; T. & O. C.; Traymore.
Brozier, F. W., S. Roll. Stock; N. Y. C.; Blenheim.
Buzzell, O. D., G. F. C. D.; A. T. & S. F.; Chalfonte.
Carr, W. K., G. C. I.; N. & W.; Chalfonte.
Caton, S. W., G. C. I.; West. Md.; Monticello.
Chamberlain, Eugene Mgr. Equipment Clearing House; N. Y. C.; Blenheim.
Chamberlin, J. T., Shelburne.
Chenoweth, E. G., M. E.; C. A. I. & P.; Traymore.
Coleman, James, Supt. C. D.; G. T. Ry.; Dennis.
Connolly, J. J., S. M. P.; D. S. & A.; Chalfonte.
Covert, M. F., A. W. C. B.; Swift Refr. Tran. Co.; Traymore.
Crawford, D. F., G. S. M. P.; P. Lines; Brighton.
Curry, H. M., Mech. Supt.; N. P. Ry.; Traymore.
Davis, J. H., Elc. Engr.; B. & O.; Shelburne.
Davisson, F. E., S. M.; S. P. L. A. & S. L.; Traymore.
Dawson, L. L., S. M. P.; Ft. W. & D. C.; Brighton.
Demarest, T. W., S. M. P.; P. Lines; Brighton.
Deverell, A. C., Supt. Shops; Gt. Nor.; Traymore.
Deyot, Frank, Gen. Ins. Standards; N. Y. C. & H. R.; Pennhurst.
Dooley, W. H., S. M. P.; C. N. C. & T. P.; Dennis.
Dunham, W. E., S. M. P. & M.; C. & N. W. Ry.; Blenheim.
Endsley, Prof. L. E., Univ. of Pittsburgh; Chalfonte.
Epler, J. E., S. M. P.; C. & E. I.; Traymore.
Everett, Ira, G. C. I.; L. V.; Dennis.
Felton, Henry E., Pres.; Union Tank Line Co.; Traymore.
Flory, B. P., S. M. P.; N. Y. O. & W.; Blenheim.
Fuller, C. E., S. M. P. & M.; Union Pacific; Blenheim.
Gaines, F. F., S. M. P.; Centr. Ga.; Blenheim.
Giles, C. T., Supt. Mach.; L. & N.; Chalfonte.
Givin, E. F., M. M.; P. S. & N.; Shelburne.
Goodman, T. H., A. S. C. D.; C. & N. W.; Blenheim.
Gorrell, W. T., M. C. B.; P. & R.; Monticello.
Gray, G. M., S. M. P.; B. & L. E.; Chalfonte.
Halbert, M. W., C. I. I.; Am. Ass'n of R. R. Supts.; Haddon Hall.
Hartman, W. J., A. B. I.; C. R. I. & P.; Edison.
Harvey, H. H., G. C. F.; C. B. & Q.; Traymore.
Heid, J. Benjamin, S. C. D.; Live Poultry Transit Co.; Traymore.
Hendry, Jno., M. C. B.; G. T. Ry.; Traymore.
Hennessey, J. J., M. C. B.; C. M. & St. P.; Blenheim.
Hyndman, F. T., S. M. P. & C.; W. & L. E.; Blenheim.
Jansen, E. W., E. E.; I. C.; Brighton.
Joughins, G. R., S. M. P.; Intercolon. Ry.; Chalfonte.
Justus, I. J., G. C. I.; N. Y. C.; Pennhurst.
Kalbaugh, I. N., S. M. P.; Coal & Coke Ry.; Haddon Hall.
Kellogg, W. L., S. M. P.; M. K. & T.; Traymore.
Kinney, M. A., S. M. P.; H. V. Ry.; Traymore.
Kleine, R. L., C. C. I.; P. R. R.; Dennis.
La Mar, A., M. M.; Penna.; Dennis.
Laughlin, Geo. F., Genl. Supt.; Armour Car Lines; Blenheim.
Lentz, J. S., M. C. B.; L. V.; Dennis.
Lewis, W. H., S. M. P.; N. & W.; Blenheim.

MacBain, D. R., S. M. P.; N. Y. C.; Blenheim.
McMullen, Jno., M. S.; Erie; Traymore.
McQuillen, J. E., M. S.; C. C. & S. F.; Chalfonte.
Mercur, R. E., T. M.; Westmoreland Coal Co.; Dennis.
Mehan, Jas. E., A. M. C. B.; C. M. & St. P.; Sterling.
Meredith, H. P., M. M.; Penna.; Brighton.
Miller, R. S., M. C. B.; N. Y. C. & St. L.; Traymore.
Milton, J. H., S. C. D.; C. R. I. & P.; Chalfonte.
Moore, B. R., S. M. P.; D. & I. R.; Traymore.
Munroe, J. T., G. F. C. R. J.; Erie; Pennhurst.
Nash, J. H., S. M. P.; Ill. Cent.; Traymore.
Parks, G. E., M. E.; Mich. Cent.; Traymore.
Porter, C. A., Supt. Trans.; Ind. Refining Co.; Haddon Hall.
Pratt, E. W., A. S. M. P.; C. & N. W. Ry.; Blenheim.
Prendergast, A. P., Supt. Mach.; Tex. & Pac. R. R.
Purcell, Jno., Asst. Vice-Pres.; A. T. & S. F.; Chalfonte.
Reese, O. P., A. E. M. P.; Penna. Co.; Brighton.
Reinhard, F. B., C. C. I.; A. T. & S. F.; Sterling.
Robertson, E. J., S. C. D.; M. St. P. & S. S. M.; Traymore.
Rockfellow, W. E., G. C. For.; N. Y. C.; Pennhurst.
Rosing, W. H. V., S. E.; St. L. & S. F.; Traymore.
Schultz, F. C., C. I. I.; G. Cent. Station; Traymore.
Schulze, R. W., S. C. D.; Frisco.; Traymore.
Seddon, C. W., S. M. P. & C.; D. M. & Nor.; Traymore.
Selloy, Samuel H., G. F. C. D.; B. & A.; Pennhurst.
Sandman, A. G., C. D.; B. & O.; Haddon Hall.
Schlafge, Wm., G. M. S.; Erie; Blenheim.
Seley, C. A., American Flexible Bolt Co.; Chalfonte.
Shoemaker, H., M. S.; B. & A.; Traymore.
Simms, H. A., Supt. Car Equip.; Wells Fargo Ex.; Chalfonte.
Smith, A. E., A. M. C. B.; Union Tank Line Co.; Traymore.
Smith, P. F., S. M. P.; Penna. Lines; Brighton.
Smith, R. D., S. M. P.; B. & A.; Dennis.
Smith, R. E., G. S. M. P.; At. Coast Line; Chelsea.
Streeter, L. P., A. B. Eng.; Ill. Cent.; Blenheim.
Swanson, Chas. N., Supt. Car Shops; A. T. & S. F.; Traymore.
Sweningen, F. H., M. M.; The Streets Co.; Alamac.
Taylor, Joseph W., Secretary M. C. B. A.; Blenheim.
Thiele, Chas. F., G. C. I.; Penna. Lines; Dennis.
Thomas, J. J., Jr., S. M. P.; M. & O.; Chalfonte.
Thompson, W. O., S. R. S.; N. Y. C.; Blenheim.
Tollerton, W. J., G. M. S.; R. I. Lines; Blenheim.
Tracy, W. L., G. M. M.; Mo. Pac.; Chalfonte.
Wahlen, Jno. M. C. B.; Barre & Chelsea; Arlington.
Waters, J. J., S. M. P.; Pere Marquette; Blenheim.
Westervelt, Joseph, M. C. B.; N. Y. C. & H. R.; Minneapolis.
Wildin, G. W., M. S.; Cent. New Eng.; Chalfonte.
White, A. M., F. C. D.; Colo. Midland, Lexington.
Wright, R. V., Mgr. Ed. R. Age Gazette; Dennis.
Yates, L. L., Supt. C. D.; Pacific Fruit Exp. Co.; Chalfonte.
Young, J. P., G. F. C. D.; N. P.; Dunlop.

MASTER MECHANICS' REGISTRATION

Akans, E. L., M. M.; Va. & S. W.; Traymore.
Akans, Geo., M. M.; Southern; Traymore.
Arp, W. C., S. M. P.; Vandalia; Blenheim.
Bell, Robt. W., G. S. M. P.; I. C.; Dennis.
Billingham, R. A., M. S.; Tenn. Centr.; Lexington.
Blake, R. P., M. M.; N. P.; Traymore.
Bowersox, C., M. M.; Z. & W.; Traymore.
Brown, H. M., S. S.; C. & O.; Blenheim.
Brozier, F. W., S. R. S.; N. Y. C.; Blenheim.
Burns, T. J., S. R. B.; M. C.; Traymore.
Chenoweth, Edwin G., M. E.; C. R. I. & P.; Traymore.
Connolly, J. J., S. M. P.; D. S. S. & A.; Chalfonte.
Cooper, F. R., J. McKey Co.; Dennis.
Cox, Millard F., A. S. M.; L. & N.; Chalfonte.
Crawford, D. F., G. S. M. P.; P. Lines; Brighton.
Davis, J. H., Elec. Engr.; B. & O.; Shelburne.
Davisson, F. E., S. M. P.; S. P. L. A. & S. L.; Traymore.
Dawson, L L., S. M. P.; Ft. W. & D. C.; Brighton.
Demarest, T W., S. M. P.; P. Lines, (West); Brighton.
Deverell, A. C., S. M. P.; G. Nor.; Traymore.
Dooley, W. H. S. M. P.; Q. & C.; Dennis.
Dunham, W. E., S. M. P.; C. & N. W.; Blenheim.
Endsley, Prof. L. E., Univ. of Pittsburgh; Chalfonte.
Epler, J. E., S. M. P.; C. & E. I.; Traymore.
Flory, B. P., S. M. P.; N. Y. O. & W.; Blenheim.
Fuller, C. E., S. M. P. & M.; U. P.; Blenheim.
Giles, C. T., Supt. Mach.; L. & N.; Chalfonte.
Gillespie, H C., M. M.; C. & O.; Blenheim.
Givin, E. F., M. E.; P. S. & N.; Shelburne.
Gray, G. M., S. M. P.; B. & L. E.; Chalfonte.
Hartman, W. J., A. B. Instr.; C. R. I. & P.; Edwion.
Hatz, G. J., M. M.; U. P.; Chalfonte.
Hobson, W. P., M. M.; C. & O.; Blenheim.
Hyndman, F. T., S. M. P. & C.; W. & L. E.; Blenheim.
Joughins, G. R., M. S.; Intercolonial; Chalfonte.
Kalbaugh, I. N., S. M. P.; C. & C. Ry.; Haddon Hall.
Kellogg, W. L.; S. M. P.; M. K. & T.; Traymore.
Kilpatrick, R. T., Chalfonte.
Kinney, M. A., S. M. P.; Hocking Valley; Traymore.
Kinney, W. H., Dearborn Chem. Co.; Strand.
Lewis, W. H., S. M. P.; N. & W.; Blenheim.
Meredith, H. P., M. M.; Penna.; Brighton.
Moore, B. R., S. M. P.; D. & I. R.; Traymore.
MacBain, D. R., S. M. P.; N. Y. C.; Blenheim.
MacBoin, D. R., S. M. P.; N. Y. C.; Blenheim.
McQuillen, J. E., M. S.; G. C. & S. F.; Chalfonte.
Nash, J. H., Shop Supt.; I. C.; Traymore.
Parks, G E., M. E.; M. C.; Traymore.
Powers, M. J., M. M.; D. & R. G.; Traymore.
Pratt, Edward W., Asst. S. M. P.; C. & N. W.; Blenheim.
Prendergast, A. P., Mech. Supt.; T. & P.
Reese, O. P., A. E. M. P.; Penna.; Brighton.
Richardson, L. A., M. Supt.; C. R. I. & P.; Traymore.
Riley, Geo. N., S. M. P., McK. Conn.; Blenheim.
Rosing, W. H. V., S. E.; St. L. & S. F.; Traymore.
Sandman, A. G., C. D.; B. & O.; Haddon Hall.
Schlafge, Wm., G. M. S.; Erie; Blenheim.
Seddon, C. W., S. M. P. & C.; D. W. & N.; Traymore.
Seley, C. A., American Flexible Bolt Co.; Chalfonte.
Shoemaker, H., M. S.; Bangor & Aroos.; Traymore.
Smith, P. F., Jr.; S. M. P.; P. Lines; Brighton.
Smith, R. D., S. M. P.; B. & A.; Dennis.
Smith, R. E., G. S. M. P.; A. C. L.; Chelsea
Storey, J. W., C. D.; C. of Ga.; Lexington.
Stout, C. F., Blenheim.
Streeter, L. P., A. B. E.; Ill. Cent.; Blenheim.
Taylor, Jos. W., Sec.; M. M. Ass'n.; Blenheim.

SPECIAL GUESTS

Alleman, Charles W., Gen. Storekeeper; P. & L. E.; Traymore.
Anderson, J. B., C. C. & S. M. P.; P. R. R.; Runnymede.
Berg, J. V., Ch. C.; N. Y. C.; Pennhurst.
Barstow, Wm. A., V. P.; Union Tank Line; Traymore.
Brigham, Edmund D., Jr., Supt. Trans.; Atlantic Seaboard Despatch.
Brown, H. M., S. S.; C. & O.; Blenheim.
Cook, W. H., I. M. P.; Penna.; Craig Hall.
Cox, Millard F., A. S. M.; L. & N.; Chalfonte.
Demint, S. W., C. I. L.; St. L. S. W.; Lexington.
Donoghue, C. H., Ass't Div. Gen'l Car; N. Y. C.; Pennhurst.
Donoghue, S., A. B. Dept.; N. Y. C.; Pennhurst, Room 100.
Emerick, W. H., Gen. Trav. Ins., Pacific Fruit Exp.; Chalfonte.
Fortner, W. H., Supt. Q. & C. Shops; Silverside.
Fuller, Edward, U. P.; Blenheim.
Gainey, J. J., M. C. B.; C. M. O. & T. P.; Chalfonte.
Geoghegan, J. T., M. E.; C. N. O. & T. P.; Chalfonte.
Gillespie, H. C., M. M.; C. & O.; Blenheim.
Graham, E. B., Gen. For.; N. Y. C.; Traymore.
Gustin, W. M., C. C. I.; Bangor & Aroos.; Haddon Hall.
Halbert, Wm.; Haddon Hall.
Hatz, G. J., U. P.; Chalfonte.
Helwig, P. W., H. C. B., C. & A.; Dennis.
Hitch, C. M., G. C. I.; C. H. & D.; Haddon Hall.
Hobson, W. P., M. M.; C. & O.; Blenheim.
Kilpatrick, J. R.; Chalfonte.
Kulp, C. J., Treas.; L. V.
Ladd, Geo. T.; Brighton.
Laing, Harry A., Traf. Man.; Lib. McNeill & Lib.; St. Charles.
Lynch, Geo., C. J. I.; Cleveland, Ohio; Borton.
McIntyre, A. M., Chf. Cl. Mech. Accts.; N. Y. N. H. & H.; Chalfonte.
McMullen, John, Jr., Erie; Traymore.
Martin, K. H., Gen. Equip. Insp.; Southern; Fredonia.
Miller, W. H., Traf. Mgr.; Indian Refining Co.; Traymore.
Page, S. D., G. C. Fore., B. & A.; Haddon Hall.
Pennal, W. R., M. M.; N. S.; Lexington.
Powell, H. G., Ass't. M. C. B.; Cudahy Ref. Line; Traymore.
Powers, M. J., M. M.; D. & R. G.; Traymore.
Purt, Arthur F., Engineer; Penna. R. R.; Devonshire.
Richardson, L. A., M. Supt.; C. R. I. & P.; Traymore.
Richardson, L. A., Jr.; C. R. I. & P.; Traymore.
Robey, A. A., Ass't C. C., G. S. M. P. & R. Southern; Lexington.
Rodgers, George Branner; L. & N.; Chalfonte.
Sicardi, E. C., Supt. Car Ser.; Union T. L. Co.; Traymore.
Stewart, A. B., Gen. For.; C. R. I. & P.
Storey, Jno., C. D.; C. of Ga.; Lexington.
Van Overbeke, Charles, Traf. Man.; Standard Oil Co. of Kentucky; St. Charles.
Wilt, W. L., Ch. Cl. S. M. P.; Penna. Co.; Dennis.
Withrow, P. C., M. E., D. & R. G.; Traymore.

Conventionalities

We observe that F. T. De Long, of the Chicago Railway Equipment Company, is here. It is rumored that we owe this pleasure to the fact that his car was stolen just as he was about to start to begin to commence to "motor" from Chicago to the seashore.

If any one should find Clark Moore, of the Safety Car Heating and Lighting Company smoking large, fat, small, thin, good or bad cigars, at any time or any place, we request they keep this distressing fact from Haines Williams, of the Chicago Railway Equipment Company.

F. F. Gaines, who was president of the Master Mechanics' Association last year, arrived on Tuesday and is much improved in health. Mr. Gaines has been back at his office in active work since March, and immediately after the convention intends taking an extended automobile trip through New York and New England.

Mr. and Mrs. A. F. McPherson, who have not missed these gatherings for a goodly number of years, are as usual at Chalfonte. Mr. McPherson is vice-president of the Bettendorf Company. J. W. Bettendorf, on account of sickness in the family, will not attend the conventions this year. J. H. Bendixen, vice-president, is at the Traymore.

George A. Cooper has been accused of many crimes; but not until Tuesday morning had we ever thought of him as an artist. Somehow or other his avoirdupois seemed to weigh against him; but he certainly was a picture as he sat on a stool in his booth and, with a delicate, ladylike touch, patiently frosted an imposing looking section of draft rigging.

E. B. Leigh, president of the Chicago Railway Equipment Company, who arrived from Chicago via the McB. & M. M. Special, looks younger every time the *Daily* sees him. His healthy and youthful appearance this year is largely due to a trip which he made last spring by boat from New York to Galveston and the time which he later spent on his ranch near San Antonio.

J. J. Hennessey, master car builder of the Chicago, Milwaukee & St. Paul and chairman of the arbitration committee of the M. C. B. Association since 1904, is recuperating from a two months' illness. Since resuming his duties three weeks ago he has regained 34 lb. of the weight he lost during his sickness. He arrived at Atlantic City yesterday afternoon ready to take up the work of the convention.

Harry A. Pike, eastern sales manager of the Breakless Staybolt Company, has missed only two M. C. B. and M. M. Conventions since the convention at Thousand Islands about 23 years ago. Mr. Pike has been eastern sales manager of the Breakless Staybolt Company since last January. He attended the Thousand Islands convention as a representative of the United States Metallic Packing Company, Philadelphia.

Just at this time, when the Coupler Committee is nearing the end of its labors in developing a standard coupler, it is of special interest to recall that the original contour lines were presented to the association many years ago by the McConway & Torley Company. William McConway was president of the company at that time. He still occupies the same position, and although he does not often find it possible to visit the conventions, he is with us this year.

For a considerable number of years it has been the pleasure of the *Daily* to record amongst the earliest arrivals Mr. and Mrs. Scott Blewett, of St. Louis, and Mr. and Mrs. D. C. Noble, of Pittsburgh. Mr. and Mrs. Blewett are here, but the chain of many links is now broken by the absence of Mr. and Mrs. Noble. Both had intended to come, but a few days ago Mr. Noble was seized with another attack of the facial nerves disturbance from which he suffered while at Atlantic City last year, and is now confined at home.

The convention will miss greatly this year the hearty greetings of J. F. De Voy, who died November 5, following an illness of eight months. Mr. De Voy has always been an active worker in both the M. C. B. and M. M. Associations. He was a forceful man, strong in his convictions, and gave freely of his experience and training to the benefit of his associates. At the time of his death he was assistant superintendent of motive power on the Chicago, Milwaukee & St. Paul, a member of the executive committee of the Master Mechanics' Association and a member of the M. M. committee on the Design, Maintenance and Operation of Electric Rolling Stock as well as a member of the M. C. B. committees on Brake Shoes and Brake Beam Equipment, and Couplers.

Superintendent of Motive Power William D. Robb, of the Grand Trunk, one of the workers at the conventions, arrived yesterday. Mr. Robb's many friends at Atlantic City and throughout the country will rejoice in the good news that the injuries received at the war front by his son, James Bruce Robb, were not as serious as at first thought. Mr. Robb has cabled for further particulars. The cablegrams thus far received by him were as follows:

Ottawa, June 7, 1916.

William Doig Robb,
Westmont, Que.

Sincerely regret inform you McG. 81, Pte. James Bruce Robb, infantry, officially reported admitted war hospital, Dartford, June 5. Gunshot wounds, ear and leg. Will send further particulars when received.

Officer in Charge Records.

Kilmarnock, June 9, 1916.

W. D. Robb, Montreal.

Bruce wounded; not serious. Address ward 20, bed 31, Dartford war hospital, Dartford, Kent, England.

Black.

W. H. Lewis, superintendent of motive power of the Norfolk & Western, who was among the early arrivals, has celebrated his seventieth birthday since last year's convention. Mr. Lewis was president of the Master Mechanics' Association in 1903-4 and is one of the most widely known railway mechanical officers in the country. On his birthday he was the recipient of letters and telegrams of congratulation, not only from all over the United States, but literally from almost all over the world. If ever there was a man who was "seventy years young" it is Mr. Lewis. He is as well and rugged, and as alert and active in all his faculties as he was twenty years ago. It is an interesting coincidence that the president of the Norfolk & Western, L. E. Johnson, also has celebrated his seventieth birthday within the last year; and, like Mr. Lewis, he appears as young and strong as most men at 55. Mr. Lewis was born on October 18, 1845, and Mr. Johnson in April, 1846. Mr. Lewis has now been in railway service fifty-five years, having begun work on the New York Central as a machinist's apprentice in 1861. He had been in the mechanical departments of the Burlington, the Northern Pacific, the Oregon Short Line and the Nickle Plate before going to the Norfolk & Western as superintendent of motive power in 1897. It will be noted that he has now been on the N. & W. nineteen years, which means that he has seen that road transformed from a property, poor physically and unable to earn its fixed charges, to one of the best physically and the most properous, financially, in the United States. No other road in the country is to-day making a more remarkable record for efficient operation and increases in net earnings.

New Devices

EXHIBITS DESCRIBED DURING THE YEAR

During the past year several new devices have been described in the *Railway Age Gazette*, the *Railway Age Gazette, Mechanical Edition*, and its successor, *the Railway Mechanical Engineer*, which are now being exhibited on the Million Dollar Pier.

No doubt many of our readers, who have found some of these of particular interest will be glad to avail themselves of the opportunity to visit the exhibits for a more careful study of these devices. For their benefit we are giving below a list of such devices which are of interest to those attending the convention of the Master Car Builders' Association this week, as well as those of general interest to both car and locomotive departments. A similar list of devices the application of which is confined to locomotives or to the maintenance of locomotives will be published in next Monday's Daily, June 19.

Ajax Third Point Support.—This is an arrangement of the truck brake rod and brake beam fulcrum to overcome the tendency of the forward end of the brake beam to tilt downward when the brakes are released. A link, hung from the end of the brake beam fulcrum, supported by an extension of the truck rod jaws maintains the beam in proper alignment and also serves as a safety support should the hangers break. It was described in the March, 1916, issue of the *Railway Mechanical Engineer*, and is on exhibit at the booth of the manufacturers, the American Steel Foundries, Chicago.

Universal Car Door Fasteners.—These fasteners are designed to meet all M. C. B. requirements as to safety and inaccessibility of bolts from without the car. They are also constructed to protect the door post when the doors stick and make it necessary to pry them open. There are two types, the "Universal Gibraltar" and the "Universal Simplex," neither of which can be opened without breaking the seal. The "Gibraltar" is the heavier type, having a channel section door stop which provides a metal contact against the door strap. A more detailed description was published in the *Railway Age Gazette* of February 11, 1916, and also in the February, 1916, *Railway Mechanical Engineer*. They are being exhibited by the Universal Car Seal and Appliance Company, Albany, N. Y.

Single Link Coupler Release Rigging.—In this device a single link with an elongated eye is used between the uncoupling lever and the coupler lock. The lever is secured to the end sill in two open brackets which are closed with cotter pins, making its removal or application a simple matter. The rigging was described in the *Railway Age Gazette* for August 13, 1915, and in the August, 1915, issue of the *Railway Age Gazette, Mechanical Edition*. It is being exhibited by the National Railway Devices Company, Chicago.

Compound Geared Pneumatic Drill.—This is an exceptionally powerful drill motor, designed for the heaviest flue rolling, drilling, reaming and tapping. The construction of the compound gear feature is such that full power is developed on both forward and reverse motions, an arrangement especially convenient in valve setting and in applying flexible staybolt sleeves. It operates at a free spindle speed of 100 r.p.m. A more detailed description appeared in the *Railway Mechanical Engineer* for April, 1916. This is one of the line of pneumatic tools manufactured by the Ingersoll-Rand Company, New York, and forms a part of the company's exhibit.

Universal Grain Door.—This door, which was originally known as the McNulty nailless grain door, is made in three sections with a metal relief door in the bottom section. This slides in metal guides and is locked, either open or closed, by a small latch. The door is firmly held by clamping dogs driven into the door-posts, two to each section. On one side these dogs are adjustable to provide for variations in the width of doorways. The doors may be used several times without repairs and are easily applied and removed. A description appeared in the *Railway Age Gazette* of March 17, 1916, and in the March, 1916, issue of the *Railway Mechanical Engineer*. It is being exhibited by the Universal Grain Door Company, Chicago.

Murray Keyoke.—This is a hinged coupler yoke designed with a pinless, interlocking hinge, which can be adapted for use with any design of draft gear. The coupler end is designed to fit accurately over the lugs on the coupler shank where it is closed by the standard coupler key, the key being relieved of pulling strains by the coupler lugs. Descriptions of this device appeared in the January 14, 1916, issue of the *Railway Age Gazette* and in the January, 1916, issue of the *Railway Mechanical Engineer*. It is manufactured by the Keyoke Railway Equipment Company, Chicago, and may be seen at the company's booth on the pier.

Moore System Refrigerator and Heater Car.—In this car the usual dead air spaces in the sides, ends, floor and ceiling are replaced by live air spaces which are connected to the interior of the car by slots in the lining about 4 in. above the floor and to the ice boxes at the top of the car. This assists circulation and surrounds the contents of the car with a wall of either cold or warm air, depending on whether the car is in use as a refrigerator or heater. The ice box is located in the center of the car, directly under the roof, where it does not occupy valuable storage space. Complete descriptions of this car were published in the *Railway Age Gazette* of March 17, 1916, and in the April, 1916, issue of the *Railway Mechanical Engineer*. The Refrigerator Heater & Ventilator Car Company, St. Paul, Minn., will have a complete car of this type on the exhibit track at Atlantic City and will also have a model and a full size heater at its booth on the pier.

J.-M. Manual Slack Adjuster.—This slack adjuster makes it unnecessary to crawl under each truck in order to take up the slack in the brake rigging as the shoes become worn. The device is inserted between the cylinder lever and the end of the floating lever rod. The body is a malleable casting of yoke form. Extending backward between the jaws of this casting is a thrust rod which works through a hole in the throat of a double yoke sliding in the body casting. A number of thrust blocks are placed in the double yoke through holes in which the thrust rod passes. A pinion, mounted on the body, works in a rack on the double yoke. By means of this the yoke may be drawn into the body, shortening the overall length of the device and the effective length of the floating lever rod. As the blocks in the yoke move off the end of the thrust rod, they drop down by gravity, throwing the holes through which the rod passes out of line and preventing its return. A complete description of this slack adjuster may be found in the *Railway Age*

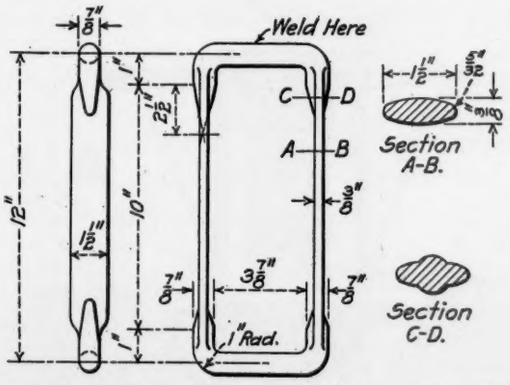
Gazette of November 19, 1915, and in the *Railway Age Gazette, Mechanical Edition*, of December, 1915. It is being exhibited by the H. W. Johns-Manville Company, New York.

"Multiplate" Valves.—These valves are provided with a special type of seat made up of a number of thin discs secured in the valve body. As the seat becomes worn so that it would ordinarily require regrinding, it is only necessary to remove the top disc to provide a new seat. This type of construction is applied to valves for a variety of special purposes, as well as to globe valves. It was described in the *Railway Mechanical Engineer* for March, 1916, and in the *Railway Age Gazette* for March 10, 1916. Valves of this type are being exhibited by the manufacturers, the O'Malley-Beare Valve Company, Chicago.

Variable Voltage Electric Welder.—The welding generator of this equipment is so designed that no resistance grids are required in the arc circuit, the voltage being automatically adjusted to maintain a constant wattage output, and consequently a constant heat output, at the arc. The power waste thereby eliminated reduces the power required by the welder of the size ordinarily used in railroad shops within the capacity of a 7½-hp. motor, This equipment was described in the *Railway Age Gazette, Mechanical Edition*, for September, 1915. It is the product of the Lincoln Electric Company, Cleveland, Ohio, and is being exhibited by the manufacturers.

DROP-FORGED BRAKE BEAM HANGER

In all railroad equipment the brake beams are supported from the truck frame by means of two hangers. The upper ends of these hangers are attached to the truck frames while the lower ends are attached to the brake beam. Provision is made for a certain amount of relative side motion which, when the trucks are new, is comparatively small. As the trucks get old and wear takes place, however, the amount of side motion increases and since the upper ends of the hangers must follow the truck frames while the lower ends follow the wheel flanges, the hangers must bend and breakage frequently occurs. Increasing the size of the hangers simply shortens their life because for a given deflection the stress increases directly with the increase of thickness in the direction of side motion. The best condition can, therefore, be obtained by making the thickness of the hanger



Brake Beam Hanger Designed for Lateral Flexibility

in the direction of side motion as small as possible without causing buckling under the braking load.

The design of brake beam hanger illustrated has been carefully worked out and the results of tests are said to indicate that the life of the new hanger is at least five times that of the round cross section. The design lends itself readily to manufacture by the drop forged method, so that the cost is nominal. This form of hanger has recently been patented and has been placed on the market by the Q & C Company, New York.

ROLLED STEEL TRUCK SIDE FRAME

A new type of composite truck side frame is being exhibited this year by the Summers Steel Car Company, Pittsburgh, Pa., for which a number of advantages are claimed.

It is extremely light in weight and considerably stronger than the arch bar type. It is also claimed to be stronger per pound of weight than the cast steel types. The tension and compression members are built of rolled steel I-beam sections riveted securely together with 1-in. machine-driven rivets, the rivets being in shear in one direction at all times. The symetrical I-beam sections with their centers of gravity intersecting each other on the vertical center lines of the axles

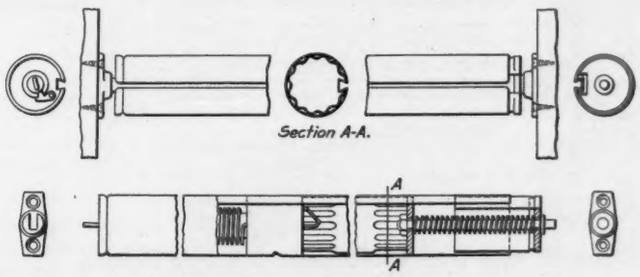
Summers Built-Up Rolled Steel Truck Frame

make it a perfect truss, with a maximum vertical and transverse strength for the weight of material used.

With this construction the frame has the same advantages as the present cast steel frames. It is handled as a unit, avoids completely the necessity of maintaining tight nuts and is made from a material which has a more uniform strength. It thus avoids the causes of most cast steel frame failures, such as hidden blow holes, opening up of seams, fatiguing the material due to bending, and the irregularities of foundry practice.

SPRING PLUG CURTAIN ROLLER

The drawing shows a curtain roller which differs from the type commonly used in that it has no set screw by which to adjust its length, the spring plug automatically adjusting the length of the roller to suit variations in the distance between the brackets that may occur in cars of different classes. This device is the product of the National Lock



National Spring Plug Curtain Roller

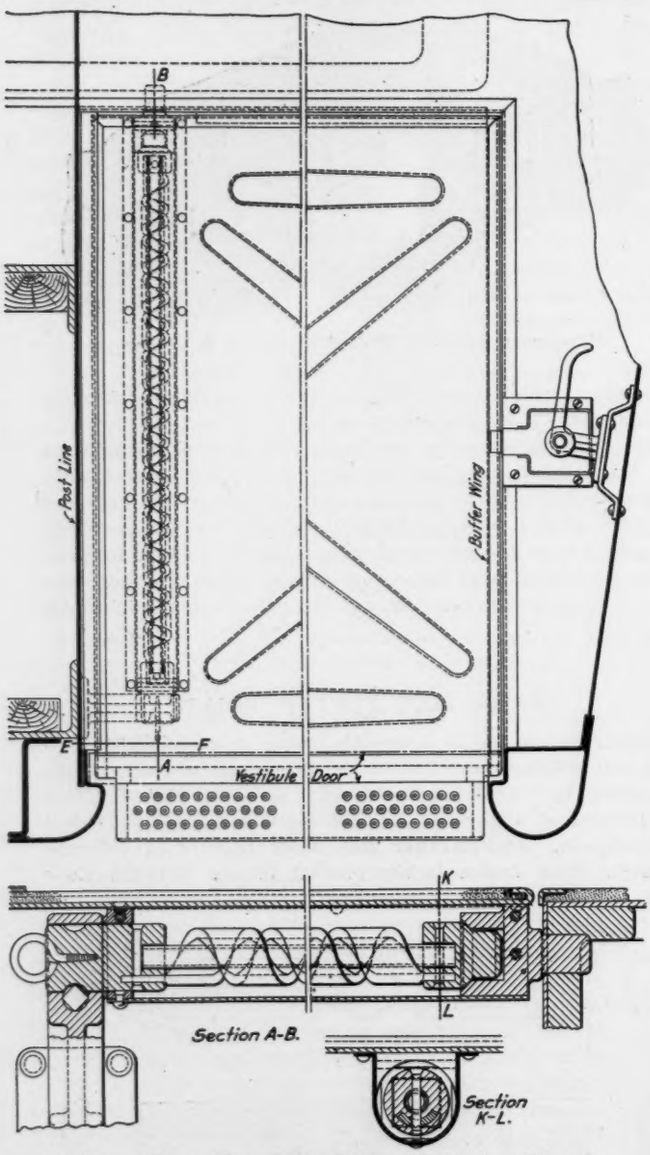
Washer Company, Newark, N. J., and is being exhibited at its booth.

The roller is of all-metal construction and, since the adjustment is made at one end, the barrel is made in one piece, thus insuring rigidity of the roller. The fact that the barrel is in one piece also insures ease of attaching the curtain to the roller. The spring plug adjustment always insures that the roller is securely held in the brackets, and yet it may easily be removed at any time with the curtain in position by compressing the end of the spring plug, no tools or skill being required for this operation.

UNIVERSAL TRAP DOOR

The vestibule trap door, the construction of which is shown in detail in the drawing, is on exhibit at the booth of the Transportation Utilities Company, New York. The construction of the door itself is similar to other types which this company has on the market, the features of principal interest being the spring and the spring adjusting device.

The spring is of 7/32-in. by 1-in. flat section, making about 12 turns in its length. It is easily adjustable to any desired tension at the front end by means of a worm gear device the general design of which is shown in the drawings. The work done by the spring is so small in amount that there is no set or evidence of strain after years of service. The arrangement

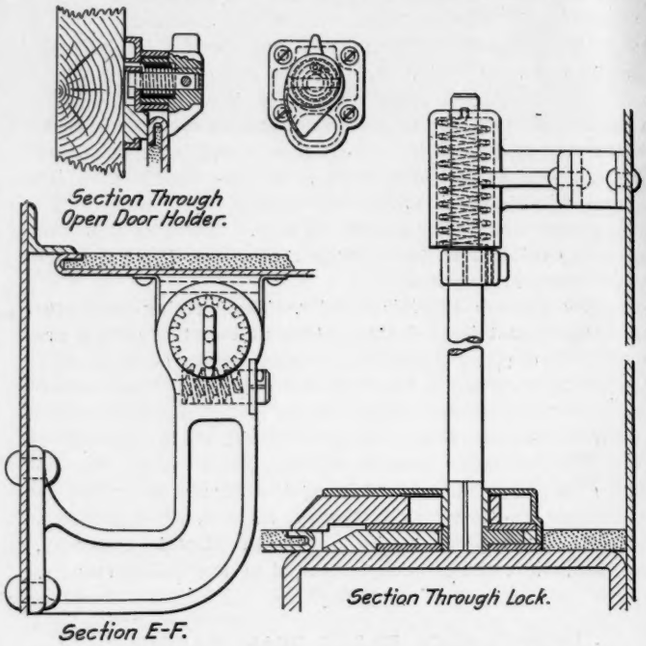


Universal Trap Door with Adjustable Spring Tension

is such that it quickly loses its tension as the door is raised. To remove the spring at the spring attachment it is necessary to take out only the adjusting worm, the door remaining undisturbed.

The door is held closed by means of a wedge lock. This lock has two bolts working in opposite directions. When the locking bolt is drawn back to release the door the wedge bolt is forced forward under the door, thus loosening and starting the door upward. The lock spring is located in a casing at the lever handle instead of in the body of the lock, where it would be subjected to the action of an accumulation of dirt and moisture.

A trap door catch, which is shown in one of the drawings, is fastened to the end of the car in line with the edge of the trap door when in its raised position. This catch is so de-

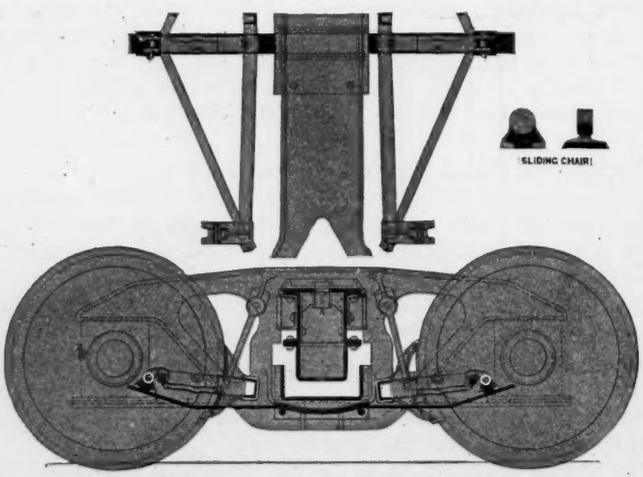


Details of the Door Spring, the Door Latch and Holder

signed that the force of the door striking it causes it to turn about its axis till the door passes, when it quickly springs back over the edge of the door.

THIRD POINT BRAKE BEAM SUPPORT

The illustration shows the Creco third point brake beam support, which is designed to keep the brake shoes away from the wheel when the brakes are released. It is being exhibited at the booth of the Chicago Railway Equipment Company, Chicago. The support is a piece of steel of rectangular cross section which is attached to the spring plank or truck frame crosstie on the longitudinal center line of the truck, the ends extending out under the brake beam truss rod. The end of the brake beam strut is extended to provide for the attachment of a sliding chair which rests on the upper surface



The Creco "Third Point" Brake Beam Support

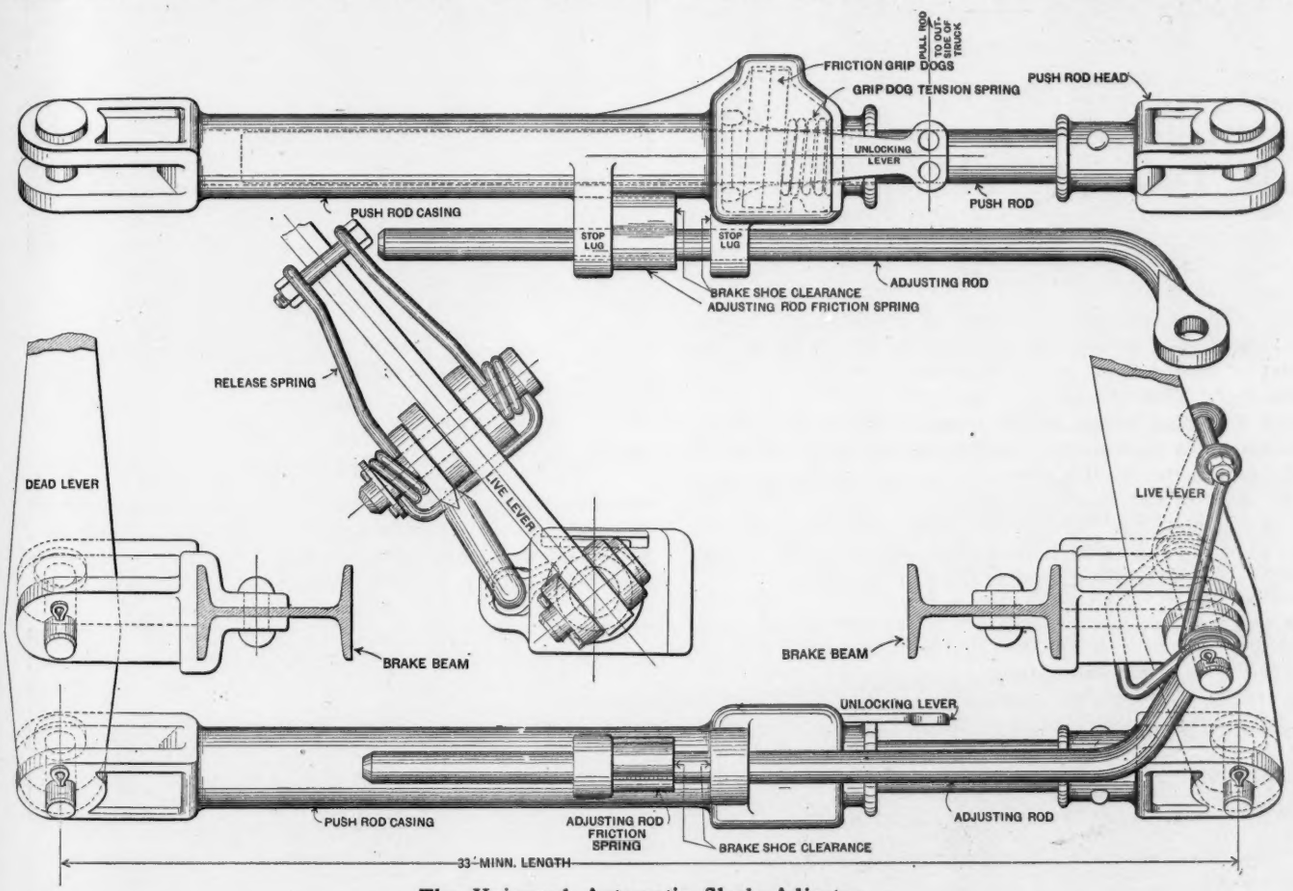
of the support and prevents the brake beam from tilting and dragging the tops of the brake shoes against the tread of the wheels when the brakes are released.

For use with brake beams the struts of which are unprovided with the special sliding chair attachment a four point

support is used. In this case two supports of rectangular cross section are attached to the spring plank, one on either side of the longitudinal center line of the truck. The beam is supported by means of sliding chairs clamped to the brake beam truss rod. These supports are now in service on about 75,000 cars.

AUTOMATIC SLACK ADJUSTER FOR FREIGHT CARS

The undesirable results produced by unequal brake cylinder piston travel on freight equipment are very generally known. The principal cause of unequal piston travel is the lack of proper slack adjustment to compensate for the wear of the brake shoes; the inconvenience and difficulty of the present means of manually adjusting slack often leading to the neglect of this important function. To overcome these difficulties and to insure continuously the proper adjustment of the foundation brake gear on freight cars, a Universal automatic slack adjuster has been brought out by the Gould Coupler Company, New York, and is being exhibited during the conventions this year.



The Universal Automatic Slack Adjuster

By referring to the drawing it will be seen that the slack adjuster replaces the push rod on the truck brake rigging. The push rod function is performed by two parts, one of which telescopes within the other. The barrel, or hollow end, is attached to the dead lever, and the solid, or push rod end, is attached to the live lever. Inside the barrel are two holding dogs through holes in which the push rod passes freely when they are held at right angles to its axis. A coil spring which surrounds the push rod holds the dogs at an agle of about four degrees from a right angle with the push rod, the ends of the dogs being fulcrumed in a recess at one side of the barrel. The push rod may thus be freely extended from the barrel, but is prevented from telescoping. An automatic adjusting rod passes through two lugs on one side of the barrel and is pinned to the brake beam fulcrum of the live lever. A friction spring device is placed on the rod between the two locks, its purpose being to prevent the free movement of the adjusting rod through the lugs without the application of considerable force. The device is designed to be applied with the dead lever normally in a vertical position, and the live lever making an angle of 12 to 15 deg. with the vertical. A special release spring, pivoted about the live lever brake beam fulcrum pin, insures the return of the lever to this normal position on the release of the brake, further movement being prevented by a limit return stop on the truck bolster.

When the brakes are applied either by hand or by air the live lever moves toward the right, forcing its brake beam and shoe against the wheels. The adjusting rod moves to the right with the brake beam, until the friction spring touches the right hand lug, the slack adjuster at the same time moving toward the left and forcing the other brake beam and shoes against the wheels. So long as the travel of the live lever is normal the friction spring on the adjusting rod moves freely between the lugs on the barrel. As soon as any wear occurs on any of the brake shoes, however, the movement of the adjusting rod is greater than the clearance between the lugs and the friction spring slips or is forced to the left along the rod when it engages the right hand lug. When the brakes are released the brake beams fall towards each other until the brake shoe clearance has been provided for. At this point the adjusting rod spring comes in contact with the left hand lug on the barrel of the slack adjuster and as the release spring continues to force the upper end of the live lever to the left it causes the push rod to move to the right through the holding dogs, thus increasing the length of the slack adjuster by the amount required to maintain the normal amount of clearance between the brake shoes and the wheels. The slack is thus automatically taken up simply by the release of the brakes, this action continuing

from time to time until it becomes necessary to renew the brake shoes.

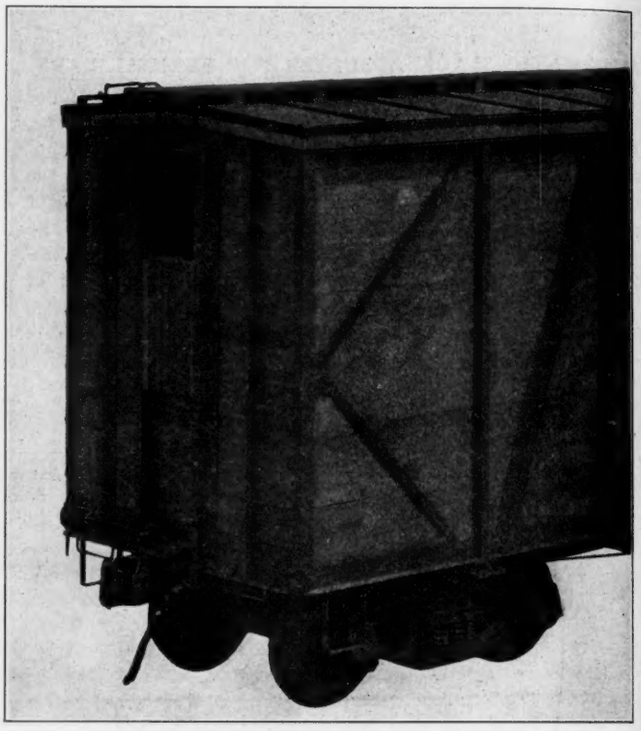
The slack adjuster is re-set when brake shoes are renewed by means of a release handle placed inside the chamber which contains the locking dogs. The movement of this lever forces the dogs to a position normal to the axis of the push rod, allowing the latter to be telescoped. The release lever is so designed that the push rod passes through it, thus holding it in place and preventing it from being lost. To its outer end are attached two ⅝-in. rods, one extending to either side of the track. The car inspector may thus unlock the holding dogs from the side of the car by pulling or pushing one of these rods about ¾ in. On letting go of the release rod the dogs are automatically locked by the spring in the adjuster barrel and the device is again ready for instant use.

STEEL FRAME BOX CAR

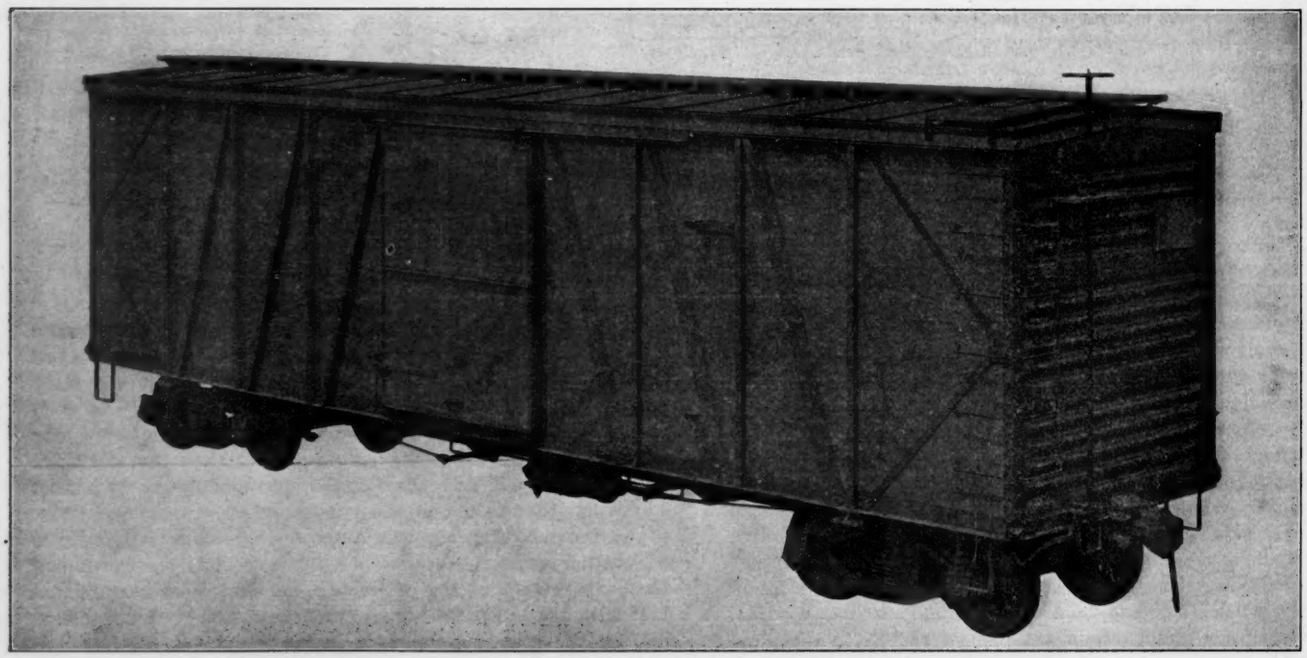
A complete, full size box car again forms a part of the exhibit of the Bettendorf Company, Bettendorf, Ia. During the conventions last year it will be remembered that an all-steel box car was shown. This year the car exhibited is of the outside steel frame type with a single thickness of horizontal wood sheathing. It is specially designed to make a strong and substantial but comparatively light weight car which can be cheaply built and maintained on account of the accessibility of its parts.

The car has a capacity of 100,000 lbs. and is 40 ft. 6 in. long by 9 ft. wide. It has a clear height inside of 9 ft. 2½ in. The point of most interest in the construction is the unique top side plate. This is made up of the usual angle bar with outward extending flange, to the inside of which is riveted a flanged angle with a long vertical leg extending below the side plate angle. To this are riveted the side posts and braces. The flange of this member is at the top and on it rests the wood side plate filler. These side plates are continuous from end to end of the car and, having the same strength throughout, require no reinforcement at the door opening.

edges of the lower sheathing boards and near the ends of the floor boards. This construction makes a seal all around the bottom of the car that is claimed to be absolutely dependable against any possibility of grain leakage. In order to show various alternate constructions the two ends of the car are of different designs. One end is of wood construction reinforced with steel frame members and fitted with a drop door, the other being a Murphy pressed steel end.



Reinforced Wood End Construction with Drop End Door



Steel Frame Box Car Exhibited by the Bettendorf Company

The side sills and end sills are of the Union Metal Products Company's 16-in., 16.67-lb. special Z-bar section. The top surface of the top flange of this section includes two continuous projections designed to fit in corresponding grooves in the

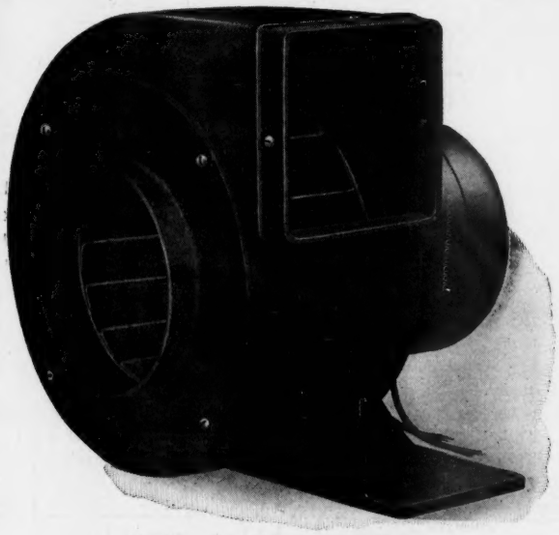
The underframe is of the latest Bettendorf type and the trucks are the Bettendorf cast steel type arranged for heights and dimensions as recommended by the committee on car trucks of the Master Car Builders' Association. The roof is

the new Murphy X-L-A flexible type; the Camel Company's side doors are used and the end door is equipped with Inlock drop end door fixtures. One end is also equipped with the Carmer uncoupling device while the other has the Imperial type "B" device.

Other specialties on the car include the Buckeye cast steel truck bolsters, Major couplers, Creco brake beams of the four-point suspension type, Standard Railway Company's carlines, National malleable hand brake arrangement, Western Railway Equipment Company's angle cock holders and Standard Railway Equipment Company's latitudinal running boards.

DINING CAR BLOWER VENTILATOR

The blower ventilator shown in the illustration is designed for use in ventilating passenger cars while standing in terminals. The use of auxiliary ventilation equipment of this kind is generally required in dining cars and business cars. The blowers are installed in lockers over the passageways for exhausting air from the passenger compartments of the latter, while in dining cars they are installed in the pantry, or the kitchen, to prevent fumes from entering the dining room This blower set is known as the Mudge-Ilg



Mudge-Ilg Blower Ventilator

electric volume blower, and is being exhibited at the booth of Mudge & Company, Chicago.

The blower housing is an iron casting so mounted and reinforced as to reduce to a minimum the sound of the blower when in operation. It is cast in one piece, the openings at the front and back being of sufficient size to allow the removal of the fan. The front end of the casting is closed by a ring attached to the casing with four cap screws. The removal of these screws will permit the removal of the fan wheel which is attached to the armature shaft of the motor by a set screw. This facilitates the frequent removal of the fan wheel, which is desirable owing to the accumulation of grease which usually takes place when the fan is in service in dining car kitchens.

The fan is of the centrifugal type, 10 in. in diameter, and having 15 blades each 4 in. wide. It is constructed of sheet steel and operates at 1250 r.p.m. with a capacity of 600 cu. ft. per minute. It is driven by a Robins & Meyer motor, specially wound for operation on low voltage car lighting circuits of from 30 to 32 volts with a current consumption of five amperes. The armature shaft at each end is provided with ball bearings, making it practically noiseless and very easy running.

The entire blower equipment is compact and weighs but 87 lb. Its construction is such that it may be applied to the car in any position by removing and relocating the four cap screws which hold the motor and blower housing together. This provides for either top or bottom outlet.

THERMOSTATIC TEMPERATURE CONTROL SYSTEM FOR PASSENGER CARS

An electrically operated temperature control system for passenger cars, which may be applied to either the straight steam, vapor or hot water heating systems, has recently been perfected by the Gold Car Heating & Lighting Company, New

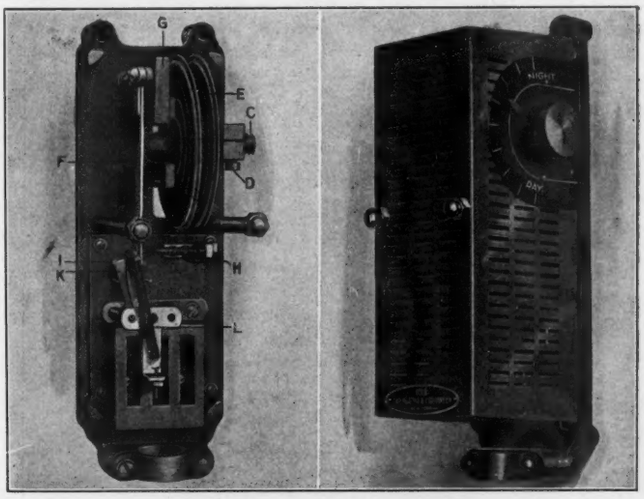


Fig. 1 Fig. 2

Fig. 1.—Thermostat with Casing Removed
Fig. 2.—Sleeping Car Thermostat

York, and is now on exhibit at its booth. The system includes two special devices, the thermostat containing the electric circuit-closing device, which is mechanically operated by a temperature-sensitive diaphragm, and an electro-magnetic valve which controls the admission of steam to the heating system of the car.

In Fig. 1 the thermostat is shown with the case removed. The temperature-sensitive element is a double diaphragm *E* containing a volatile liquid which causes it to expand with rising temperature and to contract as the temperature falls. The rear wall of this diaphragm is rigidly fixed to a guide block on the base of the instrument. The total movement resulting from temperature changes therefore takes place at the front wall, to the center of which is fixed a post which bears against the tongue *F*. This is secured at the top to a fixed support and is maintained in contact with the diaphragm by means of the coil spring *H*. Its movement therefore will always coincide with the movement of the diaphragm itself. The lower end of the tongue actuates a lever *K*, to the outer end of which is attached a spring *L*. The lower end of this spring is rigidly attached to the frame of the instrument at a point below the pivot of the lever, so that a quick, positive movement of the latter is produced in either direction from its vertical position, thus assuring a positive opening and closing of the circuit.

As the diaphragm expands with the rising of the temperature in the car, the tongue *F* is forced to the left, thus moving the lever *K* from its right-hand position toward the left. As soon as this movement reaches the vertical position, the spring *L* causes the lever to complete its movement with a snap, and the contact between the end of the lever and the post *I* closes the electric circuit which operates the magnetic valves. As long as the diaphragm is expanded by any temperature above the critical point for which the thermostat is set, the lever *K* remains in contact with the post *I*. As the diaphragm contracts with a drop in temperature, the

circuit will remain closed until the continued contraction of the diaphragm overcomes the tension of the spring *L*. At this point the lever moves quickly and positively to the right, breaking the circuit with a gap of over ¼ in.

The electro-magnetic valve is shown in Fig. 3. The upper portion of this valve contains a solenoid which, when energized by the closing of the electric circuit in the thermostat, forces the valve down to its seat and cuts off the supply of steam to the radiator coils. As soon as the circuit is broken at the thermostat, the solenoid is de-energized and the valve returns to its normal open position, in which it is maintained by a light spring. Failure of this spring, however, does not interfere with the operation of the valve, as the

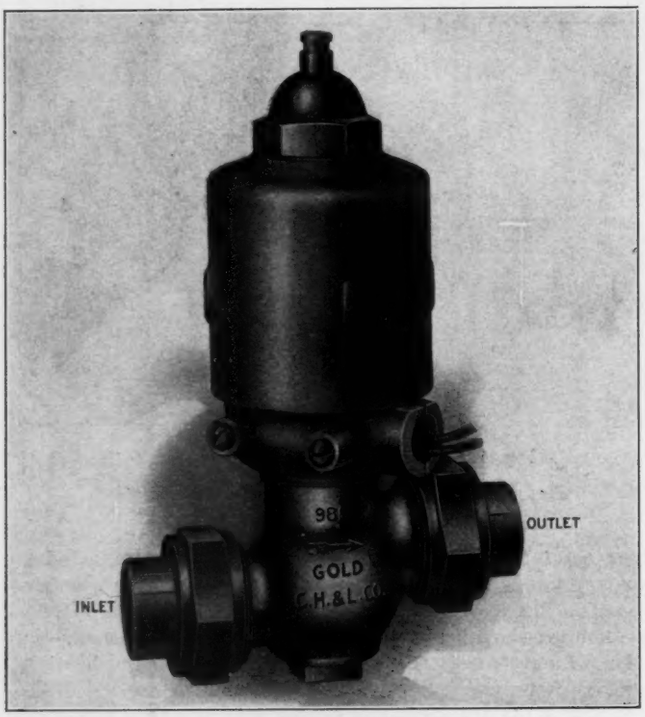


Fig. 3.—The Electro-Magnet Valve

steam pressure in the train will force it open. The spring serves to maintain the valve in the normal position when the steam is shut off, thus allowing the radiator coils to drain back to the train line. The valve being normally open causes no trouble in case of a failure of the electric current. If such a failure occurs it is still possible to regulate the steam supply by hand in the usual manner. The valve is of a packless design and is therefore leak proof. The absence of packing about the valve insures a sensitiveness and positiveness of operation which would otherwise be difficult to attain. The Gold system of thermostatic control is applicable to any system of car heating, and may be applied to old cars as well as new cars in a few hours time. The thermostat is usually placed in a convenient location on the wall at the middle of the car and the electro-magnetic valves are placed in the crossover pipes, the exact location depending on the arrangement of the piping and the heating system employed. In Fig. 4 is shown the application of the valve to a crossover pipe of a straight steam system underneath the car, while in Fig. 5 it is shown applied to a vapor heating system with the crossover pipe inside the car. The current required to energize the solenoid is very small and on electric lighted cars is obtained from the electric lighting circuit.

The thermostat is adjusted for the desired temperature before shipment, but may be reset by loosening the set screw *D*, (see Fig. 1) and turning the adjusting screw *C* to the right for a lower temperature and to the left for a higher temperature. It is not good practice, however, to allow trainmen to make this adjustment, and with the exception of those applied to sleeping cars, the thermostats are provided with no means of changing the adjustment without removing the case. For sleeping car service the thermostat is equipped

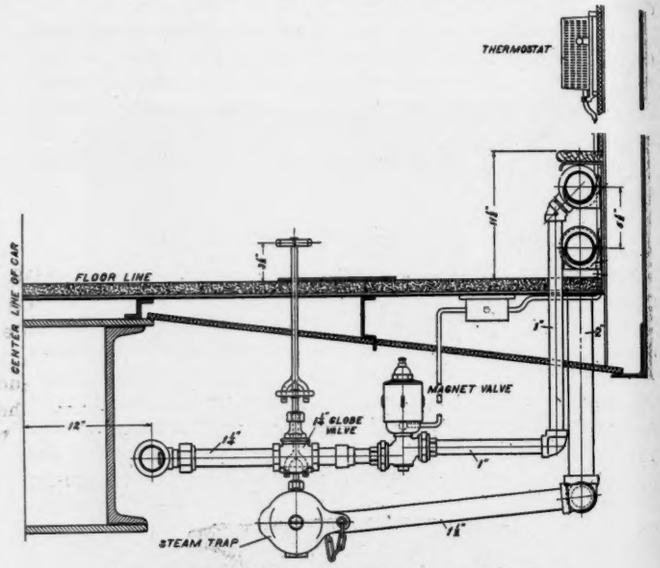


Fig. 4.—Application of Magnet Valve to a Straight Steam Heating System

with a dial and pointer on the outside of the case, as shown in Fig. 2. Two positions are shown on the barrel, one marked "Day" and the other marked "Night." During the day the porter is instructed to set the pointer in the "Day" position which maintains a temperature of approximately 70 deg. F., while at night he is instructed to set the pointer at the "Night" position, which maintains a temperature of about 60 deg. F.

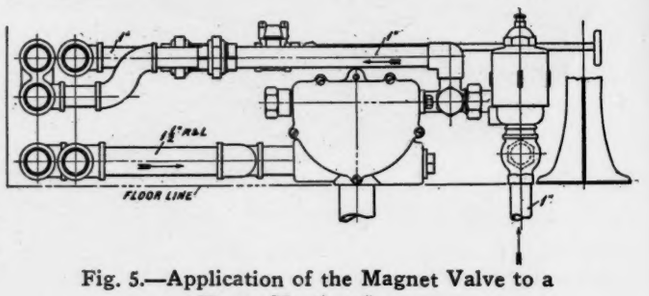


Fig. 5.—Application of the Magnet Valve to a Vapor Heating System

The thermostatic control is claimed to make possible the use of a much lower train-line pressure and to effect a large saving in steam consumption. In the heating of cars at terminals tests have shown a saving of from 50 per cent to 75 per cent in steam consumption, and when opened to receive passengers the cars are always at the proper temperature to insure comfort. The fact that there is no overheating at terminals also tends to effect a saving in the maintenance of the inside finish of the cars.

PASSENGER CAR UNCOUPLING RIGGING

An improved form of uncoupling rigging for use on passenger cars is being exhibited by the McConway & Torley Company, Pittsburgh, Pa. The design is a simple one, providing for the attachment of the uncoupling rods to the coupler without resorting to the use of cotter keys or similar means, and with a minimum number of parts. The only key used in the application is located in the bracket at the outer end of the rod, where it can readily be inspected and easily gotten at. The uncoupling rods are attached to the coupler underneath, where they clear all train pipes and other platform attachments.

STONE-FRANKLIN CAR LIGHTING SYSTEM

The Franklin Railway Supply Company, New York, has, during the past year, secured the United States right to manufacture and sell the Stone lighting system, and is marketing the equipment under the name of "Stone-Franklin Car Lighting System". Although the fundamental principles of this equipment are identical with those of the well known Stone equipment, details of construction have been embodied in the Stone-Franklin equipment which have suggested themselves from actual service conditions obtained by approximately 70,000 equipments operating in every part of the world and under most widely varying conditions. The Stone type of equipment originated the body type suspension and its method of output control permits the use of a generator always operating at the speed for which it was designed, consequently under perfect electrical conditions.

The output regulation is governed by the belt tension, which is translated into terms of amperes by an output indicator, located on the outside of the generator as shown in the illustration. This makes it possible to secure the required output without resorting to an ampere meter test on the road. The regulation of the output by this means permits the use of a smaller generator for a given service, and consequently effects a marked saving in weight and greatly simplifies the suspension. Due to this method of output control, requiring low initial belt tension, the manufacturer states that belt life is greatly increased, and the generator, operating at moderately low speed regardless of train speed over twenty miles an hour, effects necessarily a great saving in bearings, commutator carbon brushes and armature windings, reducing the maintenance to a minimum.

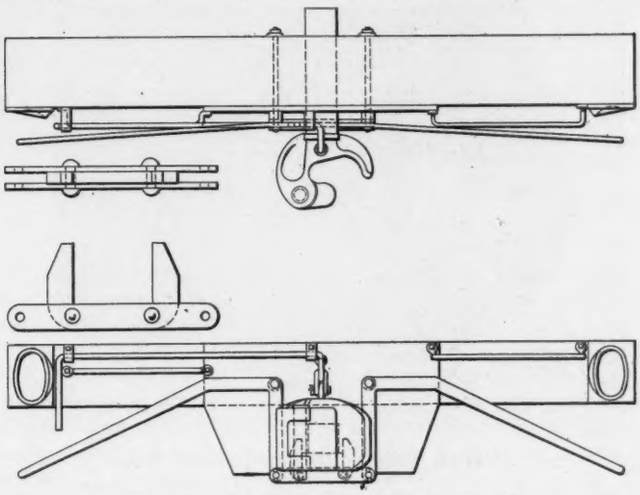
Stone-Franklin Axle Generator Showing Method of Mounting on Car Body. The Man is Pointing to the Out-Put Indicator on the Terminal Block

Substitution of the mechanical output control, which involves simply the slipping belt principle in contrast to the more or less complicated electrical regulating devices, should result in greater reliability and simplicity of the complete equipment. The regulation of the generator output, by means of the slipping belt results in a constant watt output and therefore insures a corresponding reduction of the charging current as the battery voltage rises. This tends to keep the temperature of the batteries within permissible limits.

In the regulation of lamp voltage, this system employs a principle radically different from any other types; the standard battery capacity is divided into two units, one of which is charged and the other acts as a stabilizer for the lamp voltage circuits resulting in steady and correct lamp voltage, and precluding any possibility of flickering lights. The lamp resistance which is interposed between the two battery units when the lights are switched on, serves to conduct and reduce the voltage of the necessary lamp current from the generator voltage to that of the lamps. The lamp voltage is kept steady and at its correct value by the stabilizing or regulating battery unit which is floating directly across the lamps. The automatic battery change-over switch alternates the battery units on the generator every time the train starts, and thereby insures a newly charged battery always floating across the lamps, resulting in the lamp voltage being kept always at its constant proper value. In this way a fluctation of lamp voltage is impossible and the full useful life of the lamp is obtainable. When the generator is inoperative as at station stops, the full storage capacity of the combined batteries is available for the lamps, since the resistance between the batteries is automatically short-circuited, and in the daytime the switching off of the lamps short-circuits the lamp resistance, and accordingly the generator charges both batteries in parallel.

COUPLER CENTERING DEVICE

Couplers usually have from 3 in. to 3½ in. of lateral motion on the carrier irons, sometimes considerably more, and in coupling cars it is the common practice of trainmen and switchmen to kick the couplers into line or to go between the cars in order to line them up by hand. Either method is a prolific cause of injury and loss of life. During the 33 months ending March 31, 1915, the records of the Interstate Commerce Commission show 8,428 casualties, including 469 fatalities, due to coupler accidents, of which 10.8 per cent, or 912 casualties 26 of which were fatal, were the result of adjusting couplers. The device illustrated herewith has been developed by the Oliver Iron & Steel Company, Pittsburgh, Pa., to permit adjusting the couplers laterally without going between the cars.



Centering Device for Coupler Heads

The device consists of a yoke which is placed under the shank of the coupler in front of the deadwood, or buffer plate, to each end of which is connected a bell-crank operating lever. The bell-cranks are pivoted to the face of the end sill or the deadwood, and extend out to the sides of the car, the ends being dropped and bent forward, so that there is no interference between the operation of the centering device and the release rigging.

The operation of the device consists in simply raising or lowering the operating lever whereby the yoke is moved either towards or away from the operator until the coupler is brought into the desired lateral position. Normally the device is not in contact with the coupler shank, as there is a clearance of 2 in. between the drum and the coupler. This

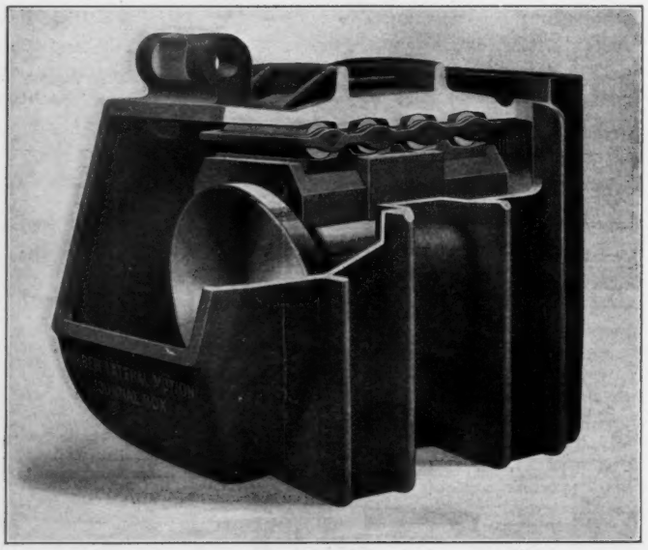
insures absolute freedom of longitudinal motion and a limited amount of lateral motion without engaging the yoke.

The device may be fitted to any car or locomotive and is adapted to use for any type of coupler release rigging. The exhibit at the booth of the Oliver Iron & Steel Company shows the device applied to the end of a 70-ton steel gondola car equipped with Carmer coupler release rigging. It is so located that it does not interfere with air brake or signal closed connection and usually requires no alteration of any part of the car or locomotive to provide for its application. It is said to work successfully with standard front end couplers of locomotives as well as with the long bar radial couplers used on locomotives operating on curves of very short radius in industrial switching service.

LATERAL MOTION JOURNAL BOX

The lateral motion journal box shown in the drawing is the product of the Standard Car Truck Company, Chicago, and is being exhibited for the first time during the conventions this year.

As shown, the lateral motion device is placed inside the box, replacing the standard wedge. Specially designed contours are cast on the under side of the top of the box, which coincide with the four steel rollers. The rollers are maintained in the proper relative position by means of a light cage and rest on the back of the brass, the contour of which corresponds with that of the top of the box. The device is designed to permit a ⅜-in. lateral movement in either direc-



Barber Lateral Motion Journal Box

tion, which reduces the pull on the journal collar and prevents cutting the ends of the brass. It also relieves the pressure on the wheel flanges. The design of the contours in contact with the rollers is such that the journal and box are automatically returned to their normal relative position as soon as the lateral thrust is exhausted.

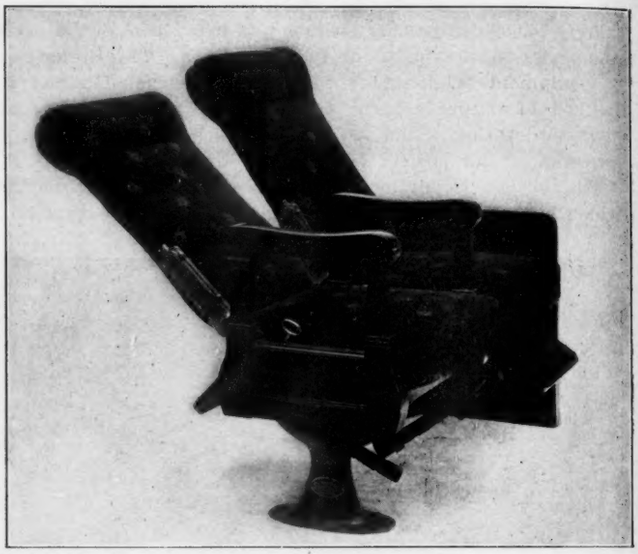
The brass and wedge used with the roller are of special design except, of course, that the bearing of the brass fits the regular M. C. B. standard journal. With the proper journal boxes this device may be applied to existing trucks without changing any other part. This feature is said to have been found of considerable value in the case of six-wheel passenger trucks, where its application to the middle pair of wheels has effected a large saving in wheel flange wear.

In removing the lateral motion device from the box the procedure is the same as with the ordinary type of wedge and brass, the rollers being first removed and the brass following.

The boxes are so designed that the rollers may be replaced with the standard M. C. B. wedge and brass in case of emergency.

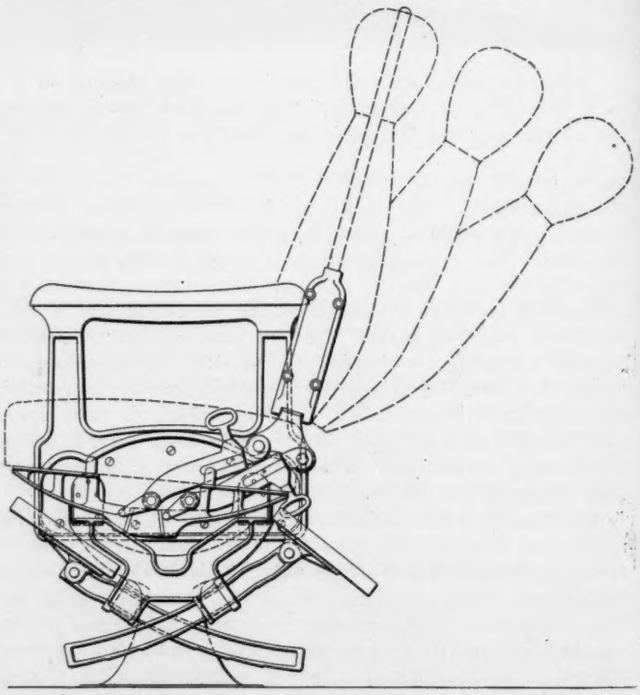
DOUBLE RECLINING CAR SEAT

A newly developed double reclining reversible car seat is illustrated herewith. It is one of the line of car seats manufactured by the Heywood Brothers & Wakefield Company, Wakefield, Mass., and is being exhibited by that



Double Reclining Reversible Car Seat

company. Pressed steel members have been extensively used in its construction. It is carried by a single pedestal at the outer end and by a patented interlocking steel wall fixture at the side of the car. The frame members extend through the dividing center arm, making it unnecessary to use a



Details of the Reversing and Reclining Mechanism

center pedestal and relieving the floor of the additional obstruction. The mechanism which controls the reclining operation of the back is arranged as a part of the reversing mechanism and is not controlled through the back. This per-

mits the back to be made quickly detachable, the same as the back on the ordinary coach seat, which is of considerable advantage in cleaning. The back is positive in its operation, automatically locking in the normal position, no matter how quickly reversed from any angle.

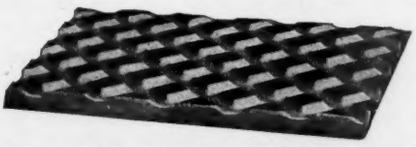
By referring to the drawings it will be seen that the reversing mechanism is of the well-known Wheeler design consisting of twin links pivotally connected to the back lever and in turn journaled in the end members of the seat frame. The reclining action is obtained by a telescoping extension of the twin links, controlled by pull handles at the sides of the seat. With the back in the normal position, a gentle pull of the handles raises a latch bolt which permits the extension of the top links. As the lower link of each pair is not released, the back moves toward a reclining position about the ends of the lower links as a pivot. If the handles are released the back will lock in the intermediate position or, otherwise, will drop to the extreme reclining position. To raise the back again to the normal position the occupant of the seat needs merely to reach behind him and easily pull the back forward to any position desired, where it will automatically be locked against backward movement. At the end of a run the backs are usually in many different positions. If it is desired to reverse them it is only necessary for the trainman to go through the cars drawing the seats from whatever position they may be found to the reverse sitting position. By the one movement the backs are brought to the normal sitting position and reversed, automatically locking when reaching the normal reverse sitting position.

As far as possible all parts of these seats are made interchangeable with the line of reversible coach seats manufactured by the same company, thus reducing the number of stock parts required by a road operating both reclining chair cars and day coaches.

SAFETY TREAD WITH DIAMOND GROOVING

The illustration shows a new type of safety tread which is being placed on the market by the American Mason Safety Tread Company, Lowell, Mass., and which is on exhibit at its booth during the conventions this year.

The Black Diamond, as this tread is known, like the Mason, possesses the necessary requirements of an efficient non-slip stair tread, including the deformed surface for receiving foreign substances, such as match stems, ice, snow, etc., and the necessary open-end grooves for drainage, thus obviating the annoying pools of water so often found on flat surface treads. Another feature to be found in the Black Diamond



Mason "Black Diamond" Safety Tread

which is also embodied in the Mason is that the abrasive is carried entirely through the tread; thus it retains its function as a safety tread, until it is entirely worn through.

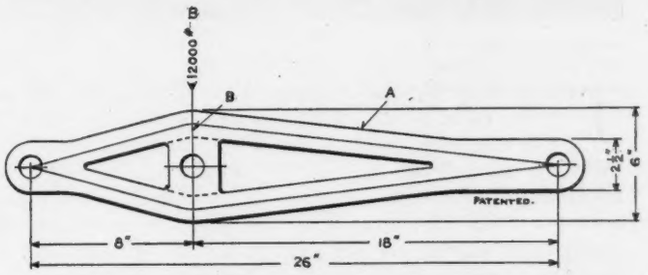
The Black Diamond is made up of a skeleton metal frame, the surface of which presents a series of raised diamond-shaped openings. Through these projects the base which is of a tough abrasive mixture. Each non-slip diamond-shaped unit is surrounded by a frame of metal on edge. This takes the wear and the anti-slip or abrasive material wears down with it.

Before being placed on the market, this tread was subjected to a thorough service test, it having been in actual use for over a year on the stairs at the main entrance to the Brooklyn Bridge, Park Row, New York City, where, it is estimated, over 100,000 persons pass daily. The condition of the treads on these stairs is said to be still practically the same as when first laid down, but little wear showing even at the points of heaviest traffic.

These treads can be applied to all types of stair treads, whether of wood, marble, concrete or steel. When ordered for new concrete work they are shipped with anchors attached, ready to put in place. They can be furnished straight or curved to any radius.

TRUSSED BRAKE LEVER

The Schaefer Equipment Company, Pittsburgh, Pa., has developed, and is showing a trussed brake lever, the strength of which has been increased over that of the solid lever now commonly used with a decrease in weight. This lever is manufactured from open-hearth bar steel. After splitting the bar through the middle it is spread apart and a strut is welded in place by special tools developed for this purpose.



Trussed Brake Lever with Welded-In Strut

The strength is increased by reason of the increased spread in the middle of the lever, which results in a lower fibre stress. The reduction in weight over that of the solid lever amounts to about 25 per cent for a truck lever, and is relatively higher for floating levers. The reduction in the weight of the moving elements in the foundation brake gear is of advantage in increasing the efficiency of the brake gear since it materially reduces the inertia which has to be overcome before effective braking force is obtained; it also reduces the wear on brake pins and pin holes.

As an illustration of stress conditions for a given load upon brake beams of say 12,000 lb. or 6,000 lb. per brake shoe, which is placed high to cover recent high capacity equipment, the maximum bending moment for the beam shown in the drawing is 66,400 in.-lb., the net section modulus at *B* is 3.81 and the maximum fibre stress is 17,700 lb. per sq. in. A solid lever for the same load and fibre stress would have a width at *B* of 4.81 in. and would weigh 25¾ lb. The corresponding weight of the trussed lever is 21 lb., a saving of about 25 per cent.

HIGH CAPACITY FRICTION DRAFT GEAR

One of the recent developments in the line of the Waugh Draft Gear Company, Chicago, which is being exhibited this year, is a high capacity draft gear taking the same dimensions required by various friction gears, namely a 9⅛-in. coupler butt and a yoke, 9⅛ in. by 24⅝ in. In this design the same yoke, lugs, followers and attachments are used as with most friction gears. The spring plates, ¼ in. by 8¾ in. by 12⅝ in., are used in four groups of fifteen plates each. This gives a cushion capacity of 500,000 lb., which is claimed to be higher than that of any draft gear heretofore designed to be enclosed within the yoke. Although of unusually high ultimate capacity, the initial resistance is moderate and the increase in resistance gradual. The release is similar in character and free from recoil. The action, both in compression and release, is positive with no sticking.

Railway Supply Manufacturers' Assn. Exhibit

Includes List of Exhibitors, Brief Descriptions of Exhibits, Names of Representatives, Space Numbers

Million Dollar Pier

THE exhibit this year is larger than in 1915, but not as large as in 1914. This is due to the inability of the machine tool builders to get together the necessary tools for an exhibit, because of the continued heavy demand for their output. If these manufacturers were represented as they were two years ago, the pier would not be nearly large enough for the exhibition. The greater part of Machinery Hall is given to other classes of exhibits.

The most notable feature this year is the improved general appearance of the pier, the better arrangement of exhibit spaces and the decorations. A new decking has been laid in the various exhibit halls. The background for each of the exhibits is of green, with a tasty white border or panel. Machinery Hall has had a new roof, and the windows are tastefully fitted with red curtains. The space over the aisles between the Main Hall and Exhibition Hall has been fitted with a uniform roof extending out a considerable distance over the exhibits and affording good protection in case of bad weather. The lighting arrangements in Exhibition Hall have been very greatly improved. The space between the Hippodrome and the Annex has been roofed over. The north side of the Annex has been fitted with sash, affording good protection in case of rainy or windy weather. In the Main Hall the movies will not be shown during the conventions, so that it will not be necessary to darken the hall, and the green curtains which have seriously interfered with the exhibits at the ocean end of the hall will be done away with. Added to this, a plentiful supply of white paint improves and brightens up the entire exhibit.

Acme Supply Company, Chicago, Ill.—Acme steel diaphragms, type A and B; simplex "U" shape double fold belting diaphragm; reverse unifold belting diaphragm; vestibule releasing curtain outfit; revolving vestibule curtain shield; enclosed or protected groove curtain fixture; Crown and Gem curtain fixtures (for open grooves); friction roller curtains; all-metal shade rollers; folding tail gate; Duplex weatherproof window outfit including sash locks and fittings; Acme brass sash; Chanarch steel flooring; Kass safety step treads; Acme steel safety step box; Regal revolving shade box; Gosso sanitary bed; Acme anti-pinch hinge door shield; steel vestibule car door; Faultless steel baggage car door; Peerless steel baggage car door; drawn, pressed and welded steel shapes. Represented by H. H. Schroyer, H. U. Morton, S. W. Midgley, F. N. Grigg, R. C. Munro, F. M. Nicholl and E. B. Van Patten. Spaces 568-569.

American Abrasive Metals Company, New York, N. Y.—Wheel truing brake shoes; various forms of "Feralun" anti-slip treads and other anti-slip treads. Represented by Wm. H. Sayre, H. W. Mowery and E. Burger. Space 627.

American Arch Company, New York, N. Y.—Security sectional brick arch. Represented by J. P. Neff, H. D. Savage, W. L. Allison, J. T. Anthony, R. J. Himmelright, George Wagstaff and Le Grand Parish. Spaces 412-414.

American Balance Valve Company, Jersey Shore, Pa.—Valve motion models; full size valves of the Jack Wilson high pressure slide and semi-plug piston types adapted to old and new power and for the highest degree of superheated steam. Models of Jack Wilson high pressure slide and semi-plug piston valves. Represented by J. T. Wilson, Frank Trump and C. C. Young. Space 383.

American Brake Company, St. Louis, Mo.—Reception booth. Represented by R. E. Adreon, T. L. Burton and H. A. Wahlert. Spaces 19 to 29.

American Brake Shoe & Foundry Company, New York, N. Y.—Reception booth. Represented by W. S. McGowan, J. S. Thompson, F. W. Sargent, E. L. Janes, A. H. Elliot, F. H. Coolidge, T. S. L. Seaman, F. H. Whitney, L. R. Dewey, J. G. Tawse and C. P. Wright. Space 416.

American Car & Foundry Company, New York, N. Y.—Cast iron chilled wheels. Represented by Scott H. Blewett, J. M. Keller, W. C. Dickerman, C. D. Eaton, E. H. Fisher and Benj. Wilson. Space 621.

American Flexible Bolt Company, Pittsburgh, Pa.—Miscellaneous lot of stay bolts. Represented by C. A. Seley, R. W. Benson, L. W. Widmeier and W. F. Heacock. Space 174.

American Locomotive Company, New York, N. Y.—Reception booth. Represented by James McNaughton, J. D. Sawyer, W. P. Steele, C. J. Donahue, W. L. Reid, J. B. Ennis, William Dalton, W. E. Woodard, J. G. Blunt, C. M. Muchnic, F. H. Reynolds, G. H. Weiler, H. J. Downes and Arthur Haller. Spaces 420-422.

American Mason Safety Tread Company, Boston, Mass.—Mason safety tread, lead and carborundum filled; Mason Black Diamond safety treads; Empire safety treads; cooper nosings for stair treads; Mason non-slip ladder shoes; Stanwood car steps and Karbolith sanitary flooring. Represented by Henry C. King and Ralph C. Davison. Space 542.

American Steel Foundries, Chicago, Ill.—Davis steel wheels; Economy draft arms; the Vulcan truck; cast steel bolsters; Ajax, Hercules and Vulcan brake beams; Simplex couplers; Ajax third point support; Simplex coupler pocket; six-wheel freight truck; springs; miscellaneous steel castings. Represented by R. P. Lamont, G. E. Scott, W. J. Lynch, J. V. Bell, G. F. Slaughter, W. R. Gravener, D. T. Harris, T. H. Hopkirk, R. E. Janney and L. E. Jones. Space 193.

Anchor Packing Company, The, Philadelphia, Pa.—General locomotive packings. Represented by W. R. Haggart, L. E. Adams, D. J. P. Murray, George L. MacCabe and B. J. Miller. Spaces 371-373.

Armstrong Cork & Insulation Company, Pittsburgh, Pa.—Nonpareil corkboard; high pressure covering; insulating brick; cork covering, for cold pipes and drinking water systems; Linotile, for flooring; Armstrong cork brick. Represented by C. H. Young and H. M. Clarke. Space 170.

Ashton Valve Company, The, Boston, Mass.—Master mechanic standard and increased lift locomotive muffler and open pop safety valves; locomotive steam and air gages; wheel press recording gages; whistles; dead weight gage testers; piston swabs and locomotive boiler appliances. Represented by A. C. Ashton, J. F. Gettrust, H. O. Fettinger and J. W. Motherwell. Space 518.

Associated Manufacturers of Malleable Iron, The, Cleveland, Ohio.—Malleable iron castings of both heavy and light section; methods of controlling the product of a modern malleable iron plant will be illustrated by preforming the wedge test, and operating a tensile and deflection testing machine; photomicrographs of malleable in its various stages of manufacture. Represented by John C. Nulsen, S. H. Standish, A. M. Fulton, Springer Brooks and J. V. Davison. Spaces 113-115-117.

Atkins & Company, E. C., Inc., Indianapolis, Ind.—Circular metal cutting saws of all kinds; metal cutting band saws; hack saw blades; hack saw frames; moulding plates; metal cutting hand saws; Atkins Kwik Kut hack saw machine; Atkins saws for all purposes. Represented by T. H. Endicott, W. L. Sturtivant and S. Patterson. Space 106.

Automatic Ventilator Company, New York, N. Y.—Car ventilators of the "Intake-and-Exhaust" and "Exhaust" types; miniature and full-sized models. Represented by George H. Ford, Frank A. Barbey, Wm. J. Fleming, Jr., and Fred. W. Roth. Space 315.

Barco Brass & Joint Co., Chicago, Ill.—Barco flexible joints, including engine-tender steam, air, oil and water connections; blow-off connections; air reservoir joint connections; car steam heat connections, smokebox blower fittings and terminal coach heatings sets. Represented by F. N. Bard, L. W. Millar and C. L. Mellor. Space 609.

Barrett Company, New York, N. Y.—Space 379.

Besly & Company, C. H., Chicago, Ill.—Photographs of Besly grinders; samples of the Besly helmet tempered taps and Besly circler for use on disc grinders. Represented by E. P. Welles and C. A. Knill. Space 148.

Bettendorf Company, The, Bettendorf, Iowa.—One 40 ft. 50-ton Bettendorf box car—single sheathed type; one 40 ft. 50-ton Bettendorf single center sill box car underframe mounted on trucks; one section of Bettendorf 40 ft. 30-ton refrigerator underframe; one Bettendorf high power quick action hand brake; one Bettendorf 40-ton truck for demonstration of assembling and dismantling; one Bettendorf 70-ton semi equalized freight car truck. Represented by J. W. Bettendorf, J. H. Bendixen, E. J. Bettendorf, A. F. Macpherson, E. E. Silk, Peter P. Beck, C. J. W. Clasen, W. G. Ransom and A. K. Reading. Space 200.

Bird-Archer Company, The, New York, N. Y.—Polarized chemicals for Locomotive use; anti-foaming chemicals; anti-leaking chemicals. Represented by P. B. Bird, Chas. A. Bird, L. F. Wilson, J. A. McFarland, W. W. Burden and John Barnes. Space 37.

Boss Lock Nut Company, Chicago, Ill.—Boss lock nuts. Represented by J. D. Purcell, J. A. MacLean, F. K. Shults, J. W. Fogg, C. Beaumont, Fred Gardner and W. G. Willcoxson. Spaces 376-377.

Bowser & Company, Inc., S. F., Fort Wayne, Ind.—Gasolene and volatile oil storage equipment; non-volatile oil storage equipment; one 1 barrel oil storage outfit; one 1 barrel oil storage outfit; battery of 2 barrel oil storage outfits; battery of six self-measuring pumps. Represented by E. H. Briggs, J. L. Handy and W. T. Simpson. Space 30.

Breakless Staybolt Company, The, Pittsburgh, Pa.—"Breakless" staybolts, radial stays and boiler braces. Represented by Robert J. McKay, J. Albert McKay, F. R. Cooper, Harry A. Pike, Willis C. Squire and Thomas J. McKay. Spaces 103-105.

Brewster, William, New York, N. Y.—Drills; reamers; rivet sets. Represented by William Brewster and James Elmslie. Space 507.

Buckeye Steel Castings Company, The, Columbus, Ohio.—Models of Major coupler; Buckeye cast steel body and truck bolsters; Buckeye cast steel truck frames; Buckeye cast steel draft yokes. Represented by S. P. Bush, J. C. Whitridge, C. B. Goodspeed, J. G. Bower, G. T. Johnson and A. H. Thomas. Space 521.

Buda-Ross, Chicago, Ill.—One Buda-Ross arc headlight equipment with 18-inch case and reflector; one model G. W. incandescent equipment with 16-inch case and reflector. Represented by Mark A. Ross and H. P. Bayley. Space 378.

Buffalo Brake Beam Company, New York, N. Y.—Freight brake beams for all classes and capacities of equipment; truss beams with either malleable iron or forged steel struts to M. C. B. standards; also beams for E. & L. equipment and all classes and capacities of tenders and electrical equipment for standard broad and narrow gauge; Buffalo passenger brake beams for all classes of service, including L. N. and P. C. equipment with automatically adjustable heads and safety locks. Represented by S. A. Crone, E. Strassburger, R. C. Fraser, A. E. Crone and O. W. Meissner. Spaces 550-551.

Byers Company, A. M., Pittsburgh, Pa.—Genuine wrought iron; full weight pipe; pipe bends; pipe coils. Represented by W. W. Williams, T. L. Lewis, R. W. Kenney and S. P. Broome. Spaces 582-583.

Cambria Steel Company, Philadelphia, Pa.—Wire, wire nails; driving and car axles; Slick deformed steel bars; angle splice bars; steel tee rails; Slick draft gear; Slick steel mine ties. Represented by R. U. Sage. Spaces 506-508-510-512.

Camel Company, Chicago, Ill.—Camel No. 27 box car door; No. 27 automatic car door; No. 32 box car door; No. 30 box car door; bottom hung door; combination burglar proof locks and stops; door opening and closing devices. Represented by A. B. Wegener, J. F. Comee, P. M. Elliott and J. M. Hopkins. Spaces 534-536.

Carbic Manufacturing Company, Duluth, Minn.—Carbic portable flare lights; Carbic oxy-acetylene welding and cutting generator and apparatus. Represented by D. C. Duncan and G. B. van Buren. Space 206.

Carborundum Company, The, Niagara Falls, N. Y.—Carborundum and Aloxite wheels. Represented by R. S. Marvin, H. P. Frost, W. W. Sanderson, E. P. Ritzma, C. C. Schumaker and C. C. Lathrop. Spaces 554-555.

Carnegie Steel Company, Pittsburgh, Pa.—Pyramid of various sizes of Schoen steel wheels for railway service; also Slick wheels for industrial purposes; 41-inch Schoen wheel for Russian railroads; 21-inch pony truck wheel to show range of products manufactured; cut gear and gear blank; locomotive pistons finished and in blank; bored driving axle; alloy steels; steel cross ties and joints. Represented by John W. Dix, William G. Clyde, R. B. Woodworth, Samuel Fray, L. C. Bihler, Charles Orchard, H. W. Summers, John Ralston, N. B. Trist and T. W. Williams. Space 418.

Chase & Company, L. C., Boston, Mass.—Mohair upholstery; plush plain, frieze, friezette, for coaches, chair and private cars; Chase imitation leather, for smokers, cabooses, engine and cabs. Represented by W. P. Underhill and H. T. Wight. Space 10.

Chicago Car Heating Company, Chicago. Ill.—Car heating apparatus. Represented by Egbert H. Gold, J. E. Buker, E. E. Smith, E. W. Rietz, F. A. Purdy, R. P. Cooley, Harry F. Lowman, George T. Cooke, Frank F. Coggin, A. D. Bruce, E. A. Schreiber and B. A. Keeler. Spaces 212-214-216-218.

Chicago-Cleveland Car Roofing Company, Chicago, Ill.—Steel carlines; all steel freight car ends; composite (wood and steel) freight car ends; car roofs. Represented by R. C. Dudley, T. N. Russell, J. L. Stark, Arthur S. Lewis and T. H. Williams. Space 514.

Chicago Pneumatic Tool Company, Chicago, Ill.—Air compressors; fuel oil engines; pneumatic tools; electric tools; speed recorder; self rotating rock drills. Represented by W. O. Duntley, W. B. Seelig, C. F. Walker, W. P. Pressinger, Thos. Aldcorn, Charles Booth, J. G. Campbell, G. A. Barden, E. M. Zwing, W. J. Devlin, B. H. Tripp, A. M. Brown, T. G. Smallwood and W. F. Delaney. Spaces 603-605.

Chicago Railway Equipment Company, Chicago. Ill.—Creco, Drexel, Diamond, National Hollow, Kewanee, Reliance, Monarch, "96" and Sterlingworth brake beams; Creco roller side bearing; Drexel roller side bearing; Economy roller side bearing; adjustable brake heads; automatically adjustable brake heads; Creco third point brake beam support; Creco four point brake beam support; Creco slack adjuster, combination rail brace and tie plate. Represented by E. B. Leigh, F. T. De Long, G. N. Van Sweringen, E. A. Le Beau, E. G. Busse, R. H. Pilson, R. J. Sheridan and C. Haines Williams. Space 639.

Chicago Steel Car Company, Chicago, Ill.—Cast steel draft arms. Represented by Chas. L. Sullivan and H. C. Priebe. Space 528.

Chicago Varnish Company, Chicago, Ill.—Steel car painting system. Represented by Geo. S. Bigelow, S. M. Dolan and Geo. G. Porter. Space 629.

Clipper Belt Lacer Company, Grand Rapids, Mich.—Belt lacer. Represented by William F. Kall. Space 104.

Commonwealth Steel Company, St. Louis, Mo.—Models, pictures and folders of various cast steel specialties such as passenger car and engine and tender trucks, tender frames, cradles, platforms, end frames, pilot beams, transom draft gear. Represented by Clarence H. Howard, H. M. Pflager, Geo. E. Howard, Boone V. H. Johnson, Chas. S. Shallenberger, Wm. P. Stout and H. B. Liggett. Spaces 386-387.

Consolidated Car-Heating Company. Albany, N. Y.—Nine foot section of one side of a passenger coach in which all the specialties used in a modern steel coach will be installed; Thermo-vapor temperature regulator, whereby a constant temperature is maintained; automatic attachment whereby temperatures in sleeping and private cars can be so controlled that they will maintain a 70 deg. temperature in the day time and 60 deg. temperature at night. Represented by C. C. Nuckols, Thomas Farmer, Jr., William S. Hammond, Jr., Butler Keys and A. T. Harding. Space 208.

Consolidated Railway Electric Lighting & Equipment Company, New York, N. Y.—Electric car lighting equipment in operation showing how the ampere hour meter control of the battery charging current prevents overcharging the storage batteries. The same equipment is shown operating on either lead or Edison batteries. A new and improved automatic switch. Represented by J. L. Watson, H. I. Ryer, W. R. Hungerford, Thos. L. Mount and D. N. Balderston. Space 614.

Ross F. Hayes, T. P. O'Brian, Geo. E. Fox, Fred M. Egolf and Edward E. Whitmore. Space 638.

Damascus Brake Beam Company, The, Cleveland, Ohio.—Sample forged steel fulcrums; brake beams. Represented by Albert Waycott and J. F. Schurch. Space 575.

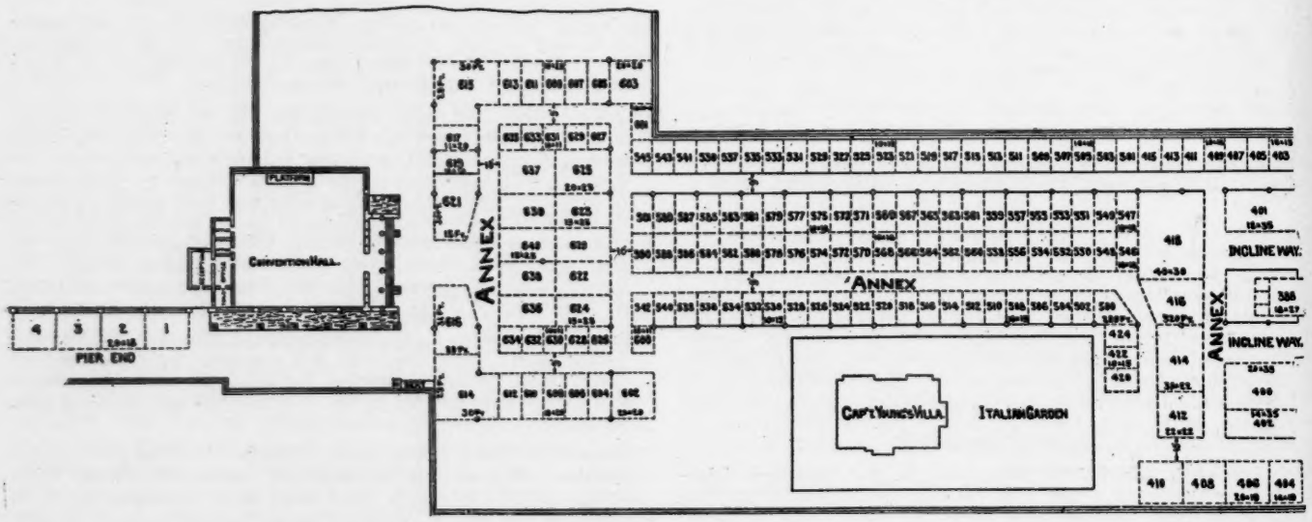
Davis Brake Beam Company, Johnstown, Pa.—Davis solid truss beam. Represented by Chas. F. Perkins and Roy Replogle. Space 119.

Davis Machine Tool Company, Inc., Rochester, N. Y.—One 12-in. "close coupled" lathe; one 16-in. quick change gear lathe; one 24-in. set-over turret lathe; one 4½-in. cutting-off machine; one No. 1 keyseater; one 16-in. shaper. Represented by J. M. Fitzgerald and F. H. Brown. Space 101.

Dearborn Chemical Company, Chicago, Ill.—Boiler feed water treatment scientifically prepared to meet requirements shown by analyses of the waters used. Represented by Robert F. Carr, George R. Carr, Grant W. Spear, J. D. Purcell, H. G. McConnaughy, J. H. Cooper, W. H. Kinney and A. W. Crouch. Spaces 6-8.

Detroit Lubricator Company, Detroit, Mich.—Detroit locomotive lubricators; flange oilers, and air cylinder lubricators; Detroit lubricators; force feed oilers; packless radiator valves; Stewart carburetors. Represented by A. G. Machesney, R. H. Braun and A. D. Honnard. Space 637.

Dixon Crucible Company, The Joseph, Jersey City, N. J.—Graphite lubricants; silica-graphite paint; graphite cruci-



Arrangement of the Exhibit Spaces at the Ocean End of the Pier

Crane Company, Chicago, Ill.—Locomotive pop safety valves; blow-off valves; cab valves; special railroad fittings; C. C. steam pressure; regulating valves; Cranetilt steam traps; Crane Erwood automatic stop and check valves; Crane "Y" pattern stop and check valves; malleable and cast iron fittings. Represented by F. D. Fenn and F. W. Venton. Spaces 502-504.

Creager & Wilson, Cecilia, Ky.—Freight car door fastener. Represented by F. W. Creager. Space 305.

Crosby Steam Gage & Valve Company, Boston, Mass.—Crosby new high efficiency locomotive safety valve; improved locomotive gages; fluid pressure scales for testing high pressures; recorder for hydraulic wheel presses; spring seat globe and angle valves; Johnstone blow-off valves; Johnstone improved blow-off valve, swing lever type. Represented by E. C. Kenyon and H. B. Forbes. Space 632.

Crucible Steel Company of America, Pittsburgh, Pa.—Reception booth. Represented by F. Baskerfield, J. T. Stafford and W. K. Krepps. Space 189.

Curtain Supply Company, The, Chicago, Ill.—Ring curtain fixtures; Rex steel diaphragms; Rex rollers with locking attachments; Rex vestibule curtain outfit, including vestibule curtain shield, steel roller, vestibule curtain, release handle and No. 6 roller bearing hook; U shape diaphragms; apex diaphragms; Rex opening plait diaphragms; sash balances. Represented by Holmes Forsyth,

bles; brake cylinder lubricant; pencils; crayons; foundry facings. Represented by H. W. Chase, H. A. Nealley, J. A. Tucker, H. Price, W. A. Housten, W. G. Stringer and L. H. Snyder. Space 24.

Dodge Metal Hose Company, Wellsville, N. Y.—Flexible metal hose for compressed air and steam. Represented by A. W. Dodge, E. W. De Wilton and H. W. Breckenridge. Space 363.

Draper Manufacturing Company, The, Port Huron, Mich.—Pneumatic flue welding machines; flue reclaiming attachments for welding long ends on flues; pneumatic flue swedging machines. Represented by Thomas Draper and Thomas H. Robinson. Space 611.

Duff Manufacturing Company, The, Pittsburg, Pa.—Duff high speed ball bearing screw jacks and journal box jacks; Duff-Bethlehem forged steel hydraulic jacks; genuine Barrett improved geared ratchet jacks; genuine Barrett improved car jacks. Represented by Chas. Hale, E. A. Johnson, T. A. McGinley, C. A. Methfessel, C. N. Thulin and G. E. Watts. Space 401.

du Pont de Nemours & Company, E. I., Wilmington, Del.—Fabrikoid; superior leather substitute; travel goods; bookbinding novelties; ivory pyralin and florentine shell; manicuring and toilet sets; chemicals; sporting and blasting powders; literature on these subjects. Represented by D. J. O'Connell, W. H. Gaynor, C. F. Shelse and J. J. O'Donohue. Spaces 548-549.

Economy Devices Corporation, New York, N. Y.—Ragonnet power reverse gear; Casey-Cavin reverse gear; Rushton power screw reverse gear; radial buffer; Universal valve chest; Economy engine and tender trucks. Represented by H. F. Ball, J. L. Randolph, H. R. Stafford and Joseph Sinkler. Spaces 412-414.

Edison Storage Battery Company, Orange, N. J.—Edison alkaline storage batteries for train lighting. Represented by H. G. Thompson, F. V. McGinness, H. M. Roberts, E. T. Sawyer, A. R. Hildebrant and W. F. Bauer. Space 636.

Edwards Company, Inc., The O. M., Syracuse, N. Y.—Window fixtures; extension platform steel trap doors; all metal sash balances; all metal shade rollers; railway padlocks; top, bottom and side weather stripping; metal stop casings and parting strips. Represented by O. M. Edwards, W. A. LeBrun, Harold Edwards, C. H. Rockwell, W. C. Bradbury and E. F. Chaffee. Spaces 527-529-531.

Electric Storage Battery Company, The, Philadelphia, Pa.—E. S. B. constant voltage axle lighting system in operation; truck and body hung type of suspension; "Chloride Accumulator" battery assembled in slatted crate construction tanks; portable signal batteries, vehicle cells of "Ironclad", "Exide", "Hycap" and "Thin Exide" type; starting and lighting batteries. Represented by J. Lester Woodbridge, F. G. Beetem, G. H. Groce, Charles W. Bell and H. E. Hunt. Space 624.

Elwell-Parker Electric Company, The, New York, N. Y.—One elevating platform truck, type EC; one industrial truck, type IJ; one crane truck. Represented by L. C. Brown, G. W. Brown, M. S. Towson, Jos. M. Brown, Frank B. Ward, J. W. Emery, J. W. Cain, E. G. Jackson and S. G. Elbe. Space 341.

Enterprise Railway Equipment Company, Chicago, Ill.—Models of all types of ballast, coal, coke and ore cars. Represented by Argyle Campbell and A. E. Zimmer. Spaces 584-585-586-587.

Equipment Improvement Company, New York, N. Y.—Trojan Metallic packing; Wine roller side bearing; Markel solid end main rod; Markel lateral motion plate; Markel removable driving box brass. Represented by C. W. Cross. Space 424.

Ewald Iron Company, Louisville, Ky.—Reception booth. Represented by Baylor Hickman, E. V. Shackleford, John P. Bourke, S. F. Sullivan, R. F. Kilpatrick and H. E. Pierce. Spaces 537-539.

Fairbanks Morse & Company, Chicago, Ill.—50 H. P. 2 phase, 60 cycle, 220 volt, 900 r. p. m. type "H" electric motor with special insulation treatment; 25 H. P. 3 phase, 60 cycle, 220 volt, 1,200 r. p. m. type "KHV" motor with special insulation treatment; 15 H. P. 3 phase, 60 cycle, 220 volt, 900 r. p. m. type "H" motor with special insulation treatment and "CC" starter; Rotor complete with half bearing arm for large type "H" motor; CP type ball bearing motor with special water proof insulation treatment; Allen & Bradley overload relay panel. Represented by A. A. Taylor, C. T. Fugitt, K. P. Brown, Geo. Howard, J. L. Jones and M. O. Southworth. Spaces 134-136.

Flannery Bolt Company, Pittsburgh, Pa.—Tate flexible staybolts; Tate radial staybolts; installation tools for application of Tate flexible staybolts. Represented by James J. Flannery, Charles Hyland, Wm. M. Wilson, Thos. J. Leahey, J. Rogers Flannery, George E. Howard, B. E. D. Stafford and Barton H. Grundy. Spaces 590-591.

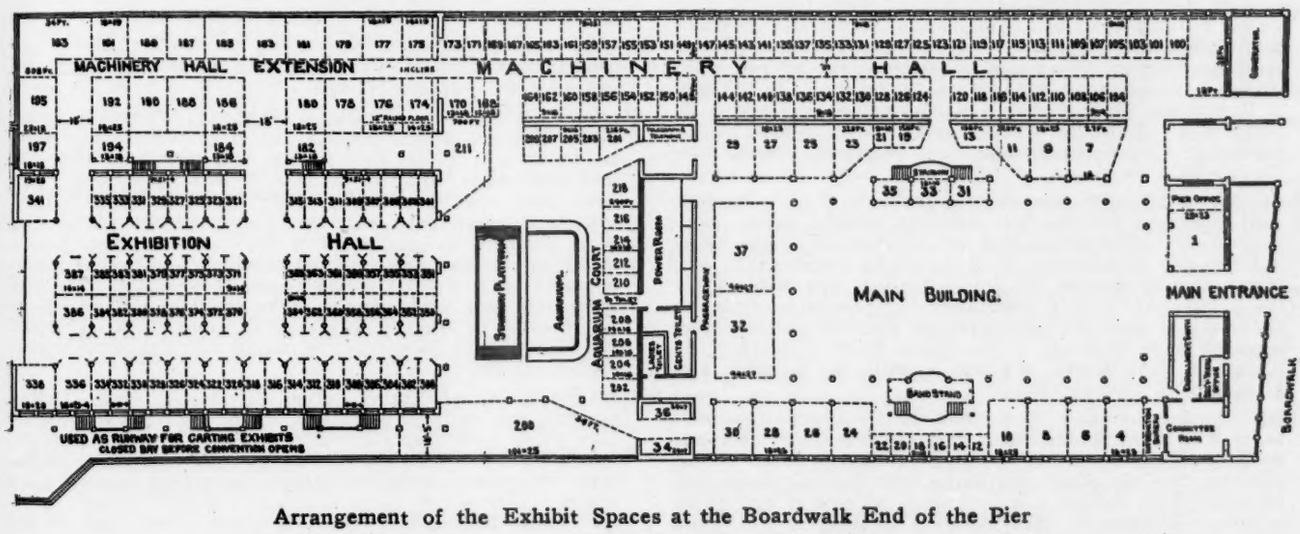
Flint & Chester, Inc., New York, N. Y.—National graphite lubricators and railroad specialties for locomotives. Represented by C .B. Flint, A. T. Chester, W. B. Wise, D. J. Lewis and Chas. Graham. Space 370.

Flower, D. B., Philadelphia, Pa.—Motor brush holders; air brake and controller handles. Represented by D. B. Flower. Space 315.

Fort Pitt Malleable Iron Company, Pittsburgh, Pa.—Reception booth. Represented by Frank J. Lanahan, J. Stevenson Lanahan and A. M. Fulton. Space 119.

Franklin Railway Supply Company, New York, N. Y.—Franklin automatic adjustable driving box wedge; Franklin fire door; Franklin single water joint; Stone-Franklin lighting equipment. Represented by J. S. Coffin, Sr., Samuel G. Allen, Walter H. Coyle, Ralph G. Coburn, C. W. Floyd Coffin, J. S. Coffin, Jr., Henry D. Rohman and Harry M. Evans. Spaces 412-414.

Frost Railway Supply Company, The, Detroit, Mich.—Harvey friction spring gears; Detroit metal weather strips; Frysco door stop and guide. Represented by Harry W. Frost, George A. Cooper and George L. Harvey. Space 560.



Arrangement of the Exhibit Spaces at the Boardwalk End of the Pier

Galena-Signal Oil Company, Franklin, Pa.—Reception booth with samples of oils. Represented by J. G. Arn, D. L. Eubank, S. A. Megeath, W. F. Walsh, W. E. Brumble, E. M. Hedley, G. E. McVicar, J. A. Whalen, J. W. Bunn, E. G. Johnson, E. V. Sedgwick, L. J. Drake, Jr., J. E. Linahen and F. B. Smith. Space 32.

Garlock, Packing Company, The, Palmyra, N. Y.—Garlock air pump and throttle packings; superheat sheet and gaskets; packings for general shop purposes. Represented by H. N. Winner, J. P. Landreth, Phil Arnold, J. S. Hearons, L. P. Duggan and G. T. Ramsey. Space 516.

General Electric Company, Schenectady, N. Y.—Mounted on pipe frame-work—1 CR-2303 5 h.p. 230 V. contactor panel; 1 CR-2361 10 h.p. 230 V. compensator panel; 1 NR-1610-H-5 10 h.p. 220 V. compensator; 1 CR-2271 3 h.p. 230 V. starting panel; 1 CR-2273 ½ h.p. 230 V. starting panel complete with field resistance; 1 CR-1038 starting switch with protective plugs; 1 CR-5070 7½ h.p. 230 V. protective panel; 1 CR-2131 D panel equipped with relay and 100 amp. switch; 1 CR-2131 E panel equipped with 100 D. P. S. T. lever switch with lockout clip; 1 CR-2131-J emergency switch; 1 CR-2131-K panel mounting 1-225-E contractor; 1 T-80 drum controller; 1 R-178 drum controller; 1 R-28 drum controller; 1 R-126 drum controller with armature resistance for 7½ h.p. motor field resistance to give 25% increase in speed mounted on back of controller; 1 R-182-A drum controller with field resistance box on back; 1 R-98 drum controller with field resistance box on back; 1 CR-2264 25 h.p. 230 V. reversing panel; 1 CR-8000 field rheostat, front of board and closed 1 BS-11-

N-3 push button station giving field protection; 1 C-308 Master controller; 1 RC-5 3 h.p. 1700 r. p. m. 23 v. shunt motor with conduit terminal box; 1 standard base; 1 standard pulley; 1 RC-8 7½ h.p. 1,150 r. p. m. 230 V. shunt semi-enclosed motor with conduit terminal box; 1 standard pulley; 1 standard base; 1 RC-12-4-30 h.p. 1,100 r. p. m. 230 volt shunt motor; 1 standard pulley; 1 standard base; 1 set of semi-enclosed covers suitable for the above motor; 1 RC-13-4 25 h.p. 230 V. 775 r. p. m. ds-2 enclosed ventilated shunt motor with envolute attachment and with conduit terminal box; 1 standard portable arc welding equipment; 1 6 in. jointer, from American Wood Working Machinery Company; 1 shaper, from Baxter D. Whitney. Represented by W. O. Kellogg, C. H. Williams, J. A. Boers, L. T. Blaisdell, W. J. Clark, P. A. Dyer, F. S. Hartman, R. E. Moore, C. C. Pierce, E. F. Lawrence, R. S. Bennett, C. Fair, R. E. Woolley, W. L. Merrill, J. W. Ham, J. A. Seede. D. K. Frost, H. L. Unland, C. D. Knight and L. W. Shugg. Spaces 163 to 173.

Gibb Instrument Company, Pittsburgh, Pa.—"I-Rite" pyrometers. Represented by W. H. Gibb and J. R. Brueckner. Space 164.

Gilbert & Barker Company, Springfield, Mass.—Battery of lubricating outfits; battery of lubricating pumps in various sizes; 2 barrel tanks showing method of welding. Represented by A. D. Wyckoff, Stanley Hope and E. E. Kling. Space 155.

Goff Electro Pneumatic Brake Company, Pittsburgh, Pa.—Electro-pneumatic brake appliance for steam and electric roads. Represented by M. D. Hays, Frank Goff, Howard Goff, and Thomas Joiner. Space 150.

Gold Car Heating & Lighting Company, New York, N. Y.—Vapor heating systems; combination vapor and pressure heating systems; straight steam heating systems; electric heating systems; Thermostatic temperature control; ventilators. Represented by Edward E. Gold, E. B. Wilson, A. B. Strange, W. H. Stocks, J. M. Stayman, G. F. Ivers, A. E. Robbins, F. O. Bailey, E. J. Ronan, F. H. Smith, A. D. Stuver, J. O. Brumbaugh and F. T. Kitchen. Spaces 350-351-352-353.

Goldschmidt Thermit Company, New York. N. Y.—Thermit and appliances for Thermit welding; sample welds; samples of carbonfree metals and alloys produced by the Thermit process; large sample weld on a 9 in. crank shaft; materials and appliances for demonstrating pipe welding for the purpose of welding locomotive superheater units; sample of superheater unit welded by the Thermit process. Represented by W. C. Cuntz, F. W. Cohen, W. R. Hulbert, H. D. Kelley, J. G. McCarty, William Aldrich, H. S. Mann and E. B. Bloom. Spaces 131-133.

Gould Coupler Company, New York, N. Y.—Locomotive pilot beam with friction draft gear and pivot coupler; complete truck—cast steel arch bar type, side frame on one side and pedestal type on other; malleable iron journal boxes also equipped with several types of slack adjusters; and truck bolster; test frame of slack adjusters operated by air; Gould intermediate coupler; passenger coupler; "Z" type coupler, bottom operating; friction passenger buffer; friction draft gears; Gould Simplex system electric car lighting and car lighting batteries. Represented by F. P. Huntley, G. G. Milne, C. E. Rood, G. R. Berger, P. H. Simpson, W. F. Richards, W. H. Sauvage, G. B. Young, M. R. Shedd and W. F. Bouche. Spaces 152-154-156-158.

Green, Tweed & Company. New York, N. Y.—Palmetto packing, braided and twist, for high steam pressures; Palmetto packing, in sets, for locomotive air brake service; Manhattan packing, for low steam and hydraulic pressures; Favorite reversible ratchet wrench for nut turning. Represented by V. B. Nickerson. Space 600.

Greenfield Cap and Die Corporation, Greenfield, Mass.—Full line of screw-cutting tools; screw plates, taps, reamers, gages, screw-cutting dies; automatic opening dies. Represented by F. W. Strecker and F. C. Hoffman. Space 129.

Greenlaw Manufacturing Company, The, Boston, Mass.—Greenlaw flexible metallic ball and rotary joints; flexible metallic hose between engine and tender and between cars; Greenlaw ball unions; Greenlaw steam pressure regulator and steam cab equipment. Represented by H. A. Royce. Spaces 301-303.

Griffin Wheel Company, Chicago, Ill.— Car wheels on standards. Represented by A. A. Hale, H. N. Scott, A. W. Brown, H. C. Van Buskirk, W. A. Bennett and G. H. Peabody. Spaces 633-635.

Grip Nut Company, Chicago, Ill.—Reception booth. Represented by E. R. Hibbard, W. E. Sharp, H. H. Hibbard, Harry Passmore and R. D. Wilson. Space 197.

Hale & Kilburn Company, Philadelphia, Pa.—Walkover car seats in plush, leather and rattan; parlor car chairs with late improvements; all-steel interior finish and trim; all-steel car doors for coaches and baggage cars. Represented by H. C. Minor, A. F. Old. J. E. Murphy, R. H. Pilson and H. R. Rochester. Spaces 408-410.

Hammett, H. G., Troy, N. Y.—Trojan metallic packing; Trojan bell ringers; triple valve bushing rollers; samples of copper pipe attached to couplings mechanically, not brazed. Represented by H. G. Hammett and A. O. VanDervort. Space 424.

Hanna Locomotive Stoker Company, The, West New Brighton, N. Y.—One Hanna locomotive stoker complete. Represented by W. T. Hanna, J. P. Hanna and E. G. Sawyer. Space 187.

Haring, Ellsworth, New York, N. Y.—Elhar brands of high speed steels; alloy and carbon steels; metals and mechanical specialties. Represented by Ellsworth Haring. Space 158.

Harrington, Son & Company, Inc., Edwin, Philadelphia, Pa.—Chain hoists and travelers. Represented by Roger Sherron, W. J. Somerset, J. A. Slaughter and G. W. Schwager. Spaces 135-137.

Hauck Manufacturing Company. Brooklyn, N. Y.—Portable and stationary oil burners for locomotives, steel car and boiler repairs; oil rivet heating forges; kerosene hand torches; portable oil fire heater operated with one burner. Represented by Willis C. Squire, G. A. Nelson, George P. Kittel and John P. Bourke. Space 4, Pier end.

Hewitt Rubber Company, New York, N. Y.—Mechanical rubber goods; packings; beltings; tilings; air brake hose; water hose; air tool hose. Represented by C. M. Bower, R. W. Henderson and W. J. King. Space 183.

Hewitt Steel Corporation, New York, N. Y.—Articulated car trucks; cast steel bolsters. Represented by H. H. Hewitt and S. J. Sill. Spaces 177-181.

Heywood Brothers and Wakefield Company, Wakefield, Mass.—New double reclining car seat; full steel coach seats, standard on B. & M. R. R., New Haven; and New York Central; semi steel seats, standard on B. & O. and C., B. & Q.; full steel coach seat, standard on Long Island R. R.; full steel suburban rattan seat and rattan upholstered parlor car chair, standard on Long Island R. R.; observation car chairs; parlor car chairs; nickel plated exhibition seat mechanism mounted on swivel table; table exhibit of metal parts, entering into seat mechanism; canvas-lined car seat webbing. Represented by Bertram Berry, E. C. Lang, C. W. H. Frederick, C. A. Van Derveer, C. M. Sailor and Frank N. Grigg. Spaces 552-553.

Hunt Spiller Manufacturing Corpn., So. Boston, Mass.—Cylinder packing; cylinder bushings; piston heads; valve packing; valve bushings; valve bull rings; side rod bushings; knuckle pin bushings; air pump packing; air pump bushings; eccentrics; eccentric straps; crosshead shoes; slide valves; valve strips; pedestal shoes; pedestal wedges; driving boxes. Represented by W. B. Leach, J. G. Platt, V. W. Ellet, J. M. Monroe, E. J. Fuller, H. McB Parker and A. B. Root, Jr. Spaces 562-563.

Illinois Steel Company, Chicago, Ill.—Space with Carnegie Steel Company. Represented by D. E. Sawyer. Space 418.

Imperial Car Cleaner Company, Newark, N. J.—Machines in operation for cleaning and restoring color to plush and cane cushions; car cleaners. Represented by Frank Sherritt, D. J. Giles, J. T. Hartnagel and J. MacNaull Wilson. Space 204.

Independent Pneumatic Tool Company, Chicago, Ill.—Reception booth. Represented by J. D. Hurley, R. T. Scott, R. S. Cooper, H. F. Finney, G. C. Wilson, Frank J. Hurley, H. Keller, F. S. Hiney, Frank F. Lingfren, G. J. Lynch, H. S. McIlvain and W. H. Rosevear. Space 574.

Ingersoll-Rand Company, New York, N. Y.—Little David chipping, scaling, riveting hammers and drills; Imperial motor hoists; Crown sand rammers. Represented by George A. Gallinger, Walter A. Johnson, M. O'Connor, George C. Williams, J. R. Randle, George S. Johnston, R. C. Cole, A. J. Sicard and C. R. Hewitt. Spaces 588-589.

International Money Machine Company, Terre Haute, Ind.—Automatic change making, adding, listing, recording, money paying and pay roll scheduling machines. Represented by M. H. Sheck. Space 13.

Jacobs-Shupert U. S. Fire Box Company, Coatesville, Pa.—Reception booth. Represented by F. H. Gordon, Henry Jacobs, J. H. Smythe, Charles Ducas, A. W. Whiteford and H. S. Coleman. Space 623.

Jefferson Union Company, Lexington, Mass.—Malleable iron unions, elbows, tees and flanges; locknut unions. Repre-

sented by D. T. Groff, C. E. Cook and C. H. Windsor. Space 33.

Jenkins Bros., New York, N. Y.—Jenkins Bros. brass globe, angle, gate and round house blower valves; Jenkins discs; car heating discs; Jenkins "96", and Jenarco; oil proof and ammonia packing. Represented by B. J. Neely, H. D. Gordon and Frank Martin. Space 538.

Jennison-Wright Company, Toledo, Ohio.—Kreolite wood block floors, structural timber, ties and piling. Represented by H. G. Jennison, A. W. Cobley and L. P. Drinker. Space 114.

Jerome-Edwards Metallic Packing Company, Chicago, Ill.—Locomotive piston rod and valve stem metallic packing. Represented by Geo. C. Jerome and R. L. McIntosh. Space 158.

Johns-Manville Company, H. W., New York, N. Y.—High and low pressure pipe covering; underground pipe covering; boiler lagging and cement; stack lining; high temperature cement; sheet packing for high and low pressure steam; steam hammer packing; throttle and air pump packing; coil, spiral and rope packings for all services; pump valves; J-M built-up and prepared asbestos roofing; J-M corrugated asbestos roofing; waterproofing materials; J-M mastic flooring; transite and ebony asbestos wood; transite asbestos shingles; transite asbestos smoke jacks and ventilators; refrigerator car insulation; steel passenger car insulation; sanitor specialties; cold water paint; iron preservative; fire extinguishers; brake blocks; fibre conduit for underground wiring; J-M manual slack take-ups; J-M expander rings; air pump piston swabs; electrical material; lighting fixtures; friction tape; supplies. Represented by J. E. Meek, J. C. Younglove, G. A. Nicol, P. C. Jacobs, F. J. Horne and H. G. Newman. Spaces 572-573.

Jones & Company, Inc., B. M., Boston, Mass.—Superheat packing for piston rods and valve stems; Mushet high speed steel; Taylor best Yorkshire iron. Represented by R. L. Thomas, S. T. Pearsons, C. J. Poore and F. J. Holden. Space 522.

Jones & Laughlin, Pittsburgh, Pa.—J. & L. standard fence. Represented by J. K. Barker. Space 409-411.

Julian-Beggs Signal Company, Terre Haute, Ind.—Automatic train control, ramp rail system; automatic train control, wireless system. Represented by Steven Smith, M. H. Hovey and Thos. E. Clark. Space 186.

Keller Mechanical Engraving Company, Brooklyn, N. Y.—"Type E-3" automatic profiler will be operated; automatically sinking drop forge dies. Represented by S. A. Keller and Jules Dierckx. Space 168.

Keller Pneumatic Tool Company, Chicago, Ill.—Complete line of new style Keller pneumatic tools; the United States Safety Retainer for retaining rivet sets. Represented by Fred Keller, E. P. Weber, Julius Keller, Jr., and H. G. Griner. Space 107.

Kerite Insulated Wire & Cable Company, The, New York, N. Y.—Insulated wires and cables. Represented by Azel Ames, P. W. Miller, J. A. Renton and J. W. Young. Space 640.

Keyoke Railway Equipment Company, Chicago, Ill.—Murray cast steel friction draft gear; Murray cast steel coupler yoke; composite coupler yoke. Represented by George C. Murray and R. J. Cook. Space 323.

Keystone Equipment Company, Philadelphia, Pa.—Keystone tool holders; Keystone driving box; Colton combination lathe tool holders; Keystone wedge bolt; literature describing; Keystone triple valve grinders for bushings; packing ring and slide valve grinder. Represented by M. R. Shafer, V. F. Shafer, J. N. Mowery and B. J. Shafer. Space 543.

Lehon Company, The, Chicago, Ill.—Asphalt roll roofing; Mule-hide slate-kote roofing, shingles, car roofing and sill covering, canvas, for engine cabs, cabooses and passenger coaches. Per-Bona insulating paper and Lehon's refrigerator paper. Mule-hide membrane; burlap back roofing and saturated burlap. Represented by Tom Lehon and D. B. Wright. Space 18.

Liberty Manufacturing Company, Pittsburgh, Pa.—Steam, air and water driven turbines for steam boilers and locomotive; arch tubes and injector pipes; Elliott twin strainers for water and fuel oil; Elliott steam and oil separators. Represented by Henry A. Pastre and James E. Watson. Space 372.

Lincoln Electric Company, The, Cleveland, Ohio.—Electric arc welding apparatus; motors. Represented by Robt. E. Kinkead and Dorsey C. Anderson. Space 126.

Linde Air Products Company, New York, N. Y.—Reception booth. Represented by J. F. High and G. O. Carter. Space 203.

Locomotive Stoker Company, Pittsburgh, Pa.—Street locomotive stoker; horizontal coal pusher; slope sheet coal pusher. Represented by W. S. Bartholomew, C. F. Street, J. J. Byrne, O. B. Capps, W. G. Clark, John J. Hannahan, R. G. Kelley, N. M. Lower, L. E. Osborne, Edward Ryan and L. V. Stevens. Spaces 403-405-407.

Locomotive Superheater Company, New York, N. Y.—Pictures illustrating methods and process used in the manufacture and superheater units and headers at the plant of the Locomotive Superheater Company, at East Chicago, Indiana. Represented by Geo. L. Bourne, F. A. Schaff, R. M. Ostermann, G. E. Ryder, F. R. Fitzpatrick, W. A. Buckbee, B. G. Lynch, George Fogg, A. C. McLachlan, George E. Spengler and R. R. Porterfield. Spaces 412-414.

Long, Jr., Company, Charles R., Louisville, Ky.—Specimens of paint films; Exposure tests; all classes of railroad paints. Represented by Charles R. Long, Jr., Harry Vissering, William H. Heckman, Guilford S. Turner, Marshall E. Keig and S. W. Russell. Space 577.

Lubricating Metal Company, The, New York, N. Y.—"Noheet" bearing metal for crossheads, brasses, car and engine journals and general shop work; die cast bearings; "Noheet" metallic piston and ring packing. Represented by Thatcher H. Soule, Herbert B. Shonk and C. B. Yardley. Space 4.

Lukens Iron and Steel Company, Coatesville, Pa.—Reception booth. Represented by F. H. Gordon, Gen. Sales Mgr., Coatesville, Pa.; G. T. Schnacz, Sales Agt., Philadelphia, Pa.; L. M. Henoch, G. R. Boyce, Chicago; J. H. Smythe, Coatesville, Pa.

Lunkenheimer Company, The, Cincinnati, Ohio.—Stop, check, safety and blow-off valves; engine trimmings embodying grease and oiling devices and lubricators for gravity and mechanical feed; accessories for internal combustion engines extensive line of engineering specialties. Represented by Howard J. Evans and Andrew Lauterbach. Spaces 517-519.

McConway & Torley Company, The, Pittsburgh, Pa.—Pitt pivoted passenger coupler No. 255, with underneath release; Pitt passenger coupler No. 6025; Pitt 3-stem coupler head No. 919-X, with underneath release; 3-stem coupler head No. 917-X, with quadruple shear to center stem; Pitt top operating freight coupler No. 5079-sts, 5 in. x 7 in. neck, 9⅛ in. rear end; Penn top operating freight coupler No. 5566-sts, 5 in. x 7 in. neck, 9⅛ in. rear end; Penn side operating freight coupler No. 5783, 5 in. x 7 in. neck, 9⅛ in. rear end. Represented by Wm. McConway, Jr., Stephen C. Mason, George W. McCandless, H. C. Buhoup, I. H. Milliken and W. J. Regan. Spaces 501-503-505.

McCord & Company, Chicago, Ill.—McCord steel, malleable iron and grey iron journal boxes; McCord force feed locomotive lubricator. Represented by J. A. Lamon, Morrill Dunn, D. W. McCord, O. H. Neal, A. C. McCord, L. A. Sheppard and W. J. Schlacks. Space 192.

McGraw Publishing Company, Inc., New York, N. Y.—Copies of Electric Railway Journal; Electrical World; Engineering Record; Metallurgical & Chemical Engineering. Represented by C. A. Babtiste, W. K. Beard, F. H. Behrens, H. W. Blake, W. Jackson, F. Kingsley, F. S. Kinsey and H. W. McGraw. Space 7.

McKinnon Chain Company, Tonawanda, N. Y.—Electric welded chain. Represented by George J. Armstrong. Space 538.

McQuay-Norris Manufacturing Company, St. Louis, Mo.—"Leak-proof" piston rings; "Lynite" pistons for Fords. Represented by L. E. McQuay, L. A. Safford and A. J. Mummert. Space 365.

MacRae's Blue Book Company, Chicago, Ill.—MacRae's Blue Book—the railway supply index-catalogue; MacRae's classified list of railroad officials. Represented by Albert MacRae, Alex Smith, R. S. Lundy and Edson B. Cooke. Space 31.

Magnus Company, Inc., New York, N. Y.—Lead lined journal bearings; brass castings. Represented by W. S. Bostwick and F. E. Beal. Space 175.

Magnusson, John A., Tacoma, Wash.—One bolt extractor. Represented by John A. Magnusson. Space 355.

Mahr Manufacturing Company, Minneapolis, Minn.—No. 1-C car repair torch; No. 2 boiler shop torch; No. 3 foundry torch; No. 4 foundry torch; No. 5-A paint burning torch; No. 12 rivet forge; No. 20 portable rivet forge; style "B" tire heater; No. 44 forging furnace. Represented by J. A. Mahr, R. B. Ecker and H. H. Warner. Space 3, pier end.

Manning, Maxwell & Moore, New York, N. Y.—Reception booth. Represented by Frank P. Smith, Chas. L. Brown, John N. Derby, H. D. Carlton, Eugene M. Moore, F. J. Mawby and J. D. Nicklis. Spaces 626-628-630.

Massachusetts Mohair Plush Company, Boston, Mass.—Plush for passenger car seats. Represented by W. W. Melcher. Space 22.

Midvale Steel Company, The, Philadelphia, Pa.—Rolled steel wheels. Represented by T. W. Illingworth. Spaces 506-508-510-512.

Milburn Company, Alexander, Baltimore, Md.—Acetylene gas apparatus including welding, cutting and lighting equipment. Represented by A. F. Jenkins, C. R. Pollard and Irvin E. Stansbury. Space 128.

Miner, W. H., Chicago, Ill.—Friction draft gear; side bearings; drawbar yokes. Represented by W. H. Miner, A. L. Canavan, S. R. Fuller, Jr., Bradley S. Jhonson, J. R. Mitchell, W. E. Robertson, J. F. O'Connor, G. Q. Lewis and George A. Johnson. Spaces 584-587.

Mudge & Company, Chicago, Ill.—Mudge peerless passenger car ventilators; Ilg volume blower for diners; Mudge-Slater spark arrester or box front end for locomotives; kitchen ventilator. Represented by Burton W. Mudge, Robert D. Slinclair, George W. Bender and Walter H. Bentley. Space 201.

Nathan Manufacturing Company, New York, N. Y.—Reception booth. Represented by E. S. Toothe, J. S. Seeley, J. C. Currie and Otto Best. Spaces 578-579.

National Brake Company, Buffalo, N. Y.—Peacock geared hand brakes; Tuma siphon and choke oil plug for locomotive cylinders. Represented by F. D. Miller and W. D. Brewster. Space 382.

National Car Wheel Company, Pittsburgh, Pa.—Star special car wheels. Represented by J. H. Yardley, C. A. Maher, E. H. Chapin, H. E. McClumpha, H. L. Garvin, R. H. Tate, J. F. Weisbrod and James Wilson. Spaces 530-532.

National Lock Washer Company, The, Newark, N. J.—Models of car curtains; curtain and window fixtures; National lock washers and Hipower nut locks. Represented by Frank B. Archibald, J. Howard Horn, Robert F. Horsey and Daniel Hoyt. Space 541.

National Malleable Castings Company, The, Cleveland, Ohio.—Couplers; journal boxes; brake staff mechanism; malleable iron castings. Represented by T. W. Aishton, J. J. Byers, J. H. Jaschka, J. A. Slater, L. S. Wright, C. A. Bieder, W. E. Coffin, O. W. Loomis, J. H. Slawson, S. H. Brooks, J. V. Davison, Jr., G. V. Martin, S. L. Smith, A. O. Buckius, Chas. Gaspar, C. H. McCrea, E. O. Warner, R. T. Hatch, B. Nields, Jr. and G. F. Wilhelmy. Spaces 613-615.

National Railway Devices Company, Chicago, Ill.—Shoemaker fire-door; National release rigging; Singlelink release rigging. Represented by Jay G. Robinson, F. D. Waller and E. J. Gunnison. Space 321.

National Tube Company, Pittsburgh, Pa.—Reception booth. Represented by Geo. N. Riley, H. S. Patterson, P. J. Conrath, Jas. G. Goodwin, J. W. Kelly, L. F. Hamilton, W. S. Bitting and R. T. Broune, Jr. Spaces 546-547.

New York Air Brake Company, New York, N. Y.—Reception booth. Represented by B. Pratt, Scott R. Hayes, C. E. Leach, N. A. Campbell, L. W. Sawyer, W. Owens and B. Haynes. Space 28.

Northern Insulating Company, St. Paul, Minn.—Flaxlinum insulating material. Represented by J. H. Burwell. Space 190.

Norton, A. O., Incorporated, Boston, Mass.—Self lowering high speed jacks. Represented by A. O. Norton, Harry A. Norton, Jos. O. St. Pierre, H. J. Wilson, C. H. Smith, Jr. and R. L. Skidmore. Space 559.

Nuttall Company, R. D., Pittsburgh, Pa.—Electric locomotive, railway and machine tool gears; flexible couplings; expansion joints. Represented by L. H. Keim and W. H. Phillips. Spaces 139-141.

Nutter & Barnes Company, Hinsdale, N. H.—Metal cutting off machinery; saw sharpener; lawn mowers and trimmers for public grounds. Represented by W. S. Howe and T. W. Welch. Space 127.

Okonite Company, The, New York, N. Y.—Okonite insulated wires and cables of every type suitable for every electrical service; Okonite splicing and Manson friction tapes. Represented by Lewis G. Martin, J. D. Underhill, W. T. Kyle and F. J. White. Space 500.

Oliver Iron & Steel Company, Pittsburgh, Pa.—Car coupler centering or adjusting device, designed to enable trainmen to adjust car couplers in making couplings; machine bolts; carriage bolts; track bolts; nuts; rivets; pole line hardware; screw spikes. Represented by F. M. Turner, John Dahlstrom and H. L. Usher. Spaces 110-112.

O'Malley-Beare Valve Company, Chicago, Ill.—"Multiplate" valves; globe; angle; checks; special locomotive and duplex blow-out valves. Represented by Edward O'Malley, J. N. Gallaghar, J. M. Pigott, Thos. O'Malley, Blake C. Hooper, E. A. Woodworth, Wm. Leighton, G. A. MacLean, J. E. Brown and Thos. L. Queenan. Spaces 109-111.

Oxweld Railroad Service Company, New York, N. Y.—Reception booth. Represented by H. W. Jacobs, G. H. Pearsall, C. B. Moore, M. C. Beymer and Charles Chumley. Space 203.

Paige & Jones Chemical Company, New York, N. Y.—System of feed water treatment. Represented by F. O. Paige and H. N. Bennett. Space 354.

Pantasote Company, The, New York, N. Y.—Pantasote curtain material; Pantasote upholstery material; Agasote, for headlinings, wainscotting, roofs, etc. Represented by John M. High, William A. Lake and William Anderson. Space 400.

Parkesburg Iron Company, The, Parkersburg, Pa.—Charcoal iron boiler tubes; safe ends; arch tubes and locomotive superheater tubes. Represented by H. A. Beale, Jr., W. H. S. Bateman, G. W. Denyven, J. A. Kinkead, George Thomas, 3rd, J. R. Wetherald and G. H. Woodroffe. Space 388.

Paxton-Mitchell Company, Omaha, Neb.—Metallic packing for locomotives; piston rod and valve stem. Represented by James L. Paxton and J. T. Luscombe. Space 535.

Penn Seaboard Steel Corporation, Philadelphia, Pa.—Test specimens of steel. Represented by Rodney Thayer and T. Burd Zell. Space 143.

Phoenix Manufacturing Company, Eau Claire, Wis.—Turret Attachments for engine lathes. Represented by W. L. Harrison and I. B. Roland. Space 359.

Pilliod Company, The, New York, N. Y.—Model of Baker locomotive valve gear; model of sentinel low water alarm. Represented by R. H. Weatherly, K. J. Eklund, Ross G. Graham, F. E. Pilliod, F. S. Wilcoxen, G. A. Blistain and C. M. Jennelle. Space 556.

Pittsburgh Locomotive Power Reverse Gear Company, S. S. Pittsburgh, Pa.—Two types of power reverse gears for locomotives. Represented by J. Rush Snyder, Alfred S. Osbourne and Lawrence L. Minor. Spaces 159-161.

Pocket List of Railroad Officials, New York, N. Y.—Pocket lists. Represented by J. Alexander Brown, C. L. Dinsmore and Harold A. Brown. Space 7.

Pratt & Lambert, Inc., Buffalo, N. Y.—Two sections of a steel car reduced to two-thirds size, showing the outside only, and finished with our Vitralite railway enamel system; also a number of small panels finished with Vitralite railway enamel in different colors. Represented by J. Parker Gowing, Don L. Clement and Carlos L. McMaster. Space 406.

Pressed Steel Car Company, New York, N. Y.—Photographs in reception booth. Represented by J. F. MacEnulty, C. E. Postlethwaite, J. H. Mitchell, L. O. Cameron, H. P. Hoffstot, J. S. Turner, W. H. Wilkinson, M. S. Simpson, H. C. Hammond, G. W. Restine, Jr., H. H. Gilbert and F. L. Johnson. Space 545-601.

Pyle-National Company, The, Chicago, Ill.—Electric headlights; turbo-generators; capacity 150-watts (6-volts), 300-watts (32-volts), 1-K. W. (32-volts) and 2½-K. W. (32 and 110-volts); Young locomotive valve gear and valves. Represented by William Miller, C. E. Miller, C. P. McGinnis, O. W. Young, R. L. McIntosh, R. C. Vilas and J. Will Johnson. Space 604-606.

Pyrene Manufacturing Company, New York, N. Y.—Pyrene fire extinguishers; general fire appliances. Represented by E. L. Kent, Benjamin D. Trask, H. B. Vandegrift, W. H. Yetman and William Dorry. Spaces 205-207-209.

Q & C Company, The, New York, N. Y.—Magnetic wig wag for crossing signals; adjustable derails; Hoke equalizer; Hoke smoke washing device; air-brake cylinder; air-brake beam hanger; Ray snow flangers and plows; Peffers air brake hose protector, some of which will be shown by a stereomotograph. Represented by C. F. Quincy, F. F. Kister, E. M. Smith, J. V. Wescott, Edmund Quincy, W. W. Hoit, E. R. Packer, E. C. Zimmerman and L. T. Burwell. Space 185.

Quigley Furnace Specialties Company, Inc., New York, N. Y.—Thwing pyrometers; Electric Heating Company's electric furnaces; Lalor fuel oil valves; Quigley Hytempite furnace

cement. Represented by W. S. Quigley, H. A. Kimber, Thos. F. Heintz and James H. McPadden. Space 162.

Railway Age Gazette, New York, N. Y.—Various newspapers for the use of railroad service; Railway Age Gazette; Railway Mechanical Engineer; Railway Signal Engineer; Railway Electrical Engineer; Railway Maintenance Engineer; Daily Railway Age Gazette; Locomotive Dictionary; Car Builders Dictionary. Represented by E. A. Simmons, L. B. Sherman, S. O. Dunn, C. R. Mills, H. Lee, R. V. Wright, C. B. Peck, F. S. Dinsmore, A. C. Loudon, R. E. Thayer, F. H. Thompson, F. W. Kraeger, C. W. Foss, E. Wray, K. R. Hare, A. R. Gegen, M. E. Christy, A. F. Ashbacker, H. H. Marsh, T. E. Crossman, B. W. Matthews and F. C. Koch. Space 1.

Railway Devices Company, St. Louis, Mo.—Western angle cock holder; Iron Horse; Sta-Rite uncoupling lever attachments; Perfect passenger brake ratchet; Spiral pipe clamps; Perfection freight brake ratchet. Represented by Louis A. Hoerr, Sterling Campbell and R. L. Langtim. Space 616.

Railway Review, Chicago, Ill.—Publications. Represented by Willard A. Smith, Harold A. Smith, John M. Lammedee, Arthur E. Hooven, Charles L. Bates and J. E. Gougeon. Spaces 12-14.

Railway Materials Company, The, Chicago, Ill.—Brake shoes. Represented by Geo. F. Allen, T. B. Cram, E. C. Folsom, Geo. Hoeffle, Ira B. Lesh and W. M. Simpson. Spaces 560-561.

Railway Supply & Equipment Company, Atlanta, Ga.—Bradford spring draft gear and Bradford rocker type of draft gear. Represented by Horace Parker and H. C. Priebe. Space 526.

Railway Utility Company, Chicago, Ill.—Exhaust and intake ventilators for passenger cars; window intake for passenger cars; Utility Thermostats. Represented by E. J. Magustadt, Wm. J. Pine and James H. Denton. Spaces 374-375.

Ralston Steel Car Company, The, Columbus, Ohio.—Reception booth. J. S. Ralston, F. E. Symons, Ford Clark, A. Becker, C. S. Rea, W. T. Sheldon, C. N. Replogle, J. R. Forney, R. R. Weaver, A. D. McAdam and Jos. Leonard. Space 607.

Reading Specialties Company, Reading, Pa.—Three sizes side-the-rail car replacers; three sizes spread-the-rail car replacers; type "B" replacer clamps; four sizes Samson type rail benders; two sizes reversible rail benders; rail straightener; three sizes guard rail clamps; compromise joint; two sizes of tie spacer. Represented by B. J. Buell and M. G. Moore. Spaces 356-357.

Refrigerator Heater & Ventilator Car Company, St. Paul, Minn.—Full sized Moore system refrigerator, heater and ventilator car on railway track; model Moore system refrigerator, heater and ventilator car in booth; full sized Moore system heater in booth. Represented by Asa G. Briggs, H. S. Schroeder and R. E. Stanton. Space 533.

Reliance Electric & Engineering Company, Cleveland, Ohio.—Type T direct current general-service constant speed motors; Reliance adjustable speed motors of the armature shifting design for machine tool drive. Represented by C. L. Collens, H. M. Hitchcock, A. M. MacCutcheon, C. A. Beck and J. Z. Kelly. Spaces 118-120.

Rich Tool Company, Chicago, Ill.—Reamers, drills, bits, rivet sets, chucks. Represented by William Brewster and James A. Elmsley. Space 507.

Robinson Company, The, Boston, Mass.—Robinson exhaust nozzle. Represented by Frederic Parker. Spaces 564-565.

Robinson Connector Company, The, Branford, Conn.—Automatic air and steam hose connector mounted on a testing table to give the various condition of service. Represented by Joseph A. Cameron and Joseph Robinson. Space 364.

Rome Merchant Iron Mill, Rome, N. Y.—Samples of Rome "Superior" staybolt iron and Rome "Perfection" engine bolt iron, hot and cold bends, etchings, etc. Represented by B. A. Clements, Weston Jenkins and C. C. Osterhout. Space 520.

Ryerson & Son, Joseph T., Chicago, Ill.—Nikrome steel forgings, samples of piston rods, side rods, etc., showing tests; Ulster special staybolt iron; Ulster engine bolt iron. Represented by E. T. Hendee, Howard A. Gray, J. C. Craigie, H. B. Hench and E. W. Kavanaugh. Space 176.

Safety Car Heating and Lighting Company, New York, N. Y.—Pintsch light; "Under-frame" axle light; gas and electric car lighting fixtures; electric fans; Oxy-Pintsch metal cutting; Pintsch oxygen. Represented by R. M. Dixon, W. L. Conwell, J. A. Dixon, A. C. Moore, W. L. Garland, G. E. Hulse, J. S. Henry, C. B. Adams, G. H. Chadwell, L. Schepmoes, J. H. Rodger and W. I. Thomson. Space Stairway, Aquarium Court.

Safety First Manufacturing Company, Chicago, Ill.—Safety caboose stoves; combustion chamber for oil burning furnaces; arrangement of gates for parcel racks; angle cock bracket; armored hose for all purposes. Represented by Fay E. Posson and L. L. Cohen. Space 210.

Schaefer Equipment Company, Pittsburgh, Pa.—Schaefer truck lever connections and Schaefer trussed brake lever. Represented by Frederic Schaefer and E. J. Searles. Space 509.

Schroeder Headlight Company, Inc., Evansville, Ind.—Incandescent headlight equipment; Sunbeam headlights; adjustable focusing stand for old type headlight cases. Represented by J. Henry Schroeder. Space 358.

Schuyler, P. R., Paterson, N. J.—Improved air hose gasket. Represented by P. R. Schuyler. Space 362.

Sellers & Company, Incorporated, Wm., Philadelphia, Pa.—Table exhibit of a few locomotive injector details and valves for same. Represented by L. H. Burns, John D. McClintock, Geo. H. Milson, E. L. Höllijes, Chas. T. Wilson and S. L. Kneass. Space 625.

Sherwin-Williams Company, The, Cleveland, Ohio.—Sherwin-Williams five-coat system for finishing passenger equipment; old dutch railway enamel; visual red for cabooses and semaphores; modern method freight car paint; canvas roof paint; one-coat baggage enamel; one-coat truck enamel. Represented by P. L. Maury, W. B. Albright, F. A. Elmquist, H. E. Billau and D. R. Jones. Space 524.

Simonds, Manufacturing Company, Fitchburg, Mass.—Hack saw blades; cold metal saws; files; circular saws; band saws; planer knives; hand saws; cross-cut saws; docking saws. Represented by J. E. Kelley and H. B. MacDonald. Space 130.

Sipe & Company, James B., Pittsburgh, Pa.—A system for the repainting of steel freight cars, including a process for the preservation of the interior of steel hopper and other types of cars. Represented by R. E. Rogers, D. B. Vail and W. F. Robinson. Space 16.

Southern Locomotive Valve Gear Company, Knoxville, Tenn.—Model and working model of the Southern valve gear. Actual size working model of the Brown power reverse gear. Represented by E. L. Chollman, H. A. Kibby and G. W. Thomas. Space 191.

Southern Pine Association, New Orleans, La.—Comprehensive exhibit of Southern Yellow Pine especially of interest to Car Builders and Master Mechanics. Represented by Dr. Herman Von Schrenk and Arnold Von Schrenk. Space 188.

Standard Asphalt & Rubber Company, Chicago, Ill.—Insulating materials; mineral rubber floors. Represented by Chas. V. Eades. Space 20.

Standard Car Truck Company, Chicago, Ill.—One full size double action truck; one full size truck, with roller journal box, side bearing latteral motion; small models of trucks; side bearings and center plates. Represented by James T. Milner, Lee W. Barber and E. W. Webb. Spaces 178-180.

Standard Coupler Company, New York, N. Y.—Reception booth. Represented by Geo. A. Post, E. H. Walker, Geo. A. Post, Jr., A. P. Dennis and R. D. Gallagher, Jr. Space 617.

Standard Heat & Ventilation Company, Inc., New York, N. Y.—Improved car heating apparatus; systems of passenger car ventilation; steam hose couplers; end train line valves; automatic traps and regulators; Standard Econotherm which uses the exhaust steam from the air brake pump for heating passenger trains. Represented by C. E. Lowell, C. F. McCuen, C. H. McCormick and L. B. Rhodes. Space stairway platform.

Standard Stoker Company, Inc., New York, N. Y.—Moving full sized locomotive stoker; air compressors and engines; Kerosine engines. Represented by J. A. Carey, D. T. Williams, F. H. Cunningham and W. Harper. Space 211.

Stark Car Coupler Corporation, Washington, D. C.—One pilot coupler; one freight car coupler; two miniature cars on rails equipped with the Stark coupler. Represented by C. H. Kadie and C. H. Stark. Space 174.

Strong-Kennard & Nutt Company, The, Cleveland, Ohio.—Adjustoglas goggles for grinding, chipping and general protection use; Adjustoweld goggles for welding; respirators. Represented by Buell W. Nutt. Space 380.

Summers Steel Car Company, Pittsburgh, Pa.—Summers arch bar side frame. Represented by E. W. Summers and J. M. Summers. Space 634.

Symington Company, The, T. H., Rochester, N. Y.—Reception booth. Represented by C. J. Symington, W. W. Rosser, T. C. deRosset, R. H. Gwaltney, A. H. Weston, C. R. Naylor and Horace White. Spaces 570-571.

Taylor Automatic Coupler, Findlay, Ohio.—Full size coupler and models. Represented by J. C. Taylor. Space 305.

Transportation Utilities Company, New York, N. Y.—Flexolith composition flooring; National standard roofing; National steel trap doors; Universal steel trap door; Resisto Insulation; Imperial car window screens; Reliance and Perfection sash balances; Eclipse deck sash ratchets. Represented by David W. Pye, Garrett Burgert, H. B. Chamberlain, W. J. Elliott, F. N. Grigg, L. F. McNally, J. W. Coleman and T. L. Miller. Spaces 566-567.

Union Carbide Sales Company, New York, N. Y.—Reception booth. Represented by B. O'Shea, J. R. Crawford and L. G. Suscipj. Space 203.

Union Draft Gear Company, Chicago, Ill.—Cardwell friction draft gears. Represented by J. R. Cardwell, L. T. Canfield, W. G. Krauser, J. W. Hathaway, J. E. Tarleton and H. Barnard. Spaces 413-415.

Union Spring & Manufacturing Company, Pittsburgh, Pa.—Locomotive, passenger and freight car springs; electric railway springs; machinery and miscellaneous springs; Kensington pressed steel journal boxes; miscellaneous steel castings; pressed steel shapes. Represented by C. S. Faller, H. F. Ayres, W. L. Jefferies and L. G. Woods. Space 620.

United Engineering & Foundry Company, Pittsburgh, Pa.—Photographs of forging press installations. Represented by Arnold P. Bark. Space 540.

U. S. Light & Heat Corporation, Niagara Falls, N. Y.—U-S-L axle driven equipments for electric lighting of railroad cars; complete demonstrating set showing behavior under all conditions of variable loads and speeds; U-S-L storage batteries for car lighting; U-S-L storage batteries for automatic signals. Represented by J. Allan Smith, A. H. Ackermann, C. C. Bradford, H. A. Matthews, E. F. Oates, W. L. Bliss, W. A. Turbayne and L. S. Cunny. Spaces 333-335.

U. S. Metal and Manufacturing Company, New York, N. Y.—Reception booth. Represented by B. A. Hegeman, Jr., Chas. C. Castle, F. C. Dunham, E. D. Hillman, H. A. Hegeman, Walter H. Evans, J. Turner Martyn and J. Hunter Ross. Space 622.

United States Metallic Packing Company, The, Philadelphia, Pa.—King type metallic packing for locomotive piston rods, valve stems and air pumps; Leach sanders; Gollmar bell ringer; Security knuckle and wrist pin. Represented by Morris B. Brewster, John S. Mace, H. M. Wey, R. R. Wells and Elliott Curtiss. Space 525.

Universal Car Seal & Appliance Company, Albany, N. Y.—Burglarproof box car, metal stops and locks and fasteners; car seals. Represented by Allston Headley. Space 385.

Universal Draft Gear Attachment Company, Chicago, Ill.—Cast steel draft arms; friction tandem draft gear; cast steel yokes of various types; miscellaneous steel and malleable castings. Represented by C. J. Nash and C. C. Kinsman. Space 515.

Universal Grain Door Company, Chicago, Ill.—Nailles temporary grain doors. Represented by E. F. Glenny and J. C. McNulty. Space 381.

Valentine & Company, New York, N. Y.—Valentine's Valspar; panels showing our various systems of railway car painting; water machine to show waterproof qualities of Valspar; railway signal enamels. Represented by Langdon B. Valentine and Irving H. Munford. Spaces 580-581.

Vissering & Company (Inc.), Harry, Chicago, Ill.—"Crescent" metallic packing for piston rod and valve stem; "Viloco" and "Leach" type locomotive sanders; bell ringers; pneumatic fire door; one-piece malleable iron brake step. Represented by Harry Vissering, G. S. Turner, W. H. Heckman, M. E. Keig, Chas. R. Long, Jr., and A. G. Hollingshead. Space 577.

Vulcan Brake-Shoe & Equipment Company, New York, N. Y.—Brake-shoes. Represented by W. H. McDonough, R. M. Brower, E. B. Smith, F. W. Grant, R. N. Hill, and H. K. Schoenheiter. Space 384.

Warner & Swasey Company, The, Cleveland, Ohio.—No. 2A universal hollow hexagon turret lathe, with bar equipment, operating on bar work; No. 3A universal hollow hexagon turret lathe, with chucking equipment, operating on chucking work. Represented by A. C. Cook, L. K. Berry and H. E. Witham. Spaces 123-125.

Watson Stillman Company, The, New York, N. Y.—Thirty ton telescopic hydro-pneumatic pit jack; air engine driven pump; standard types hydraulic jacks. Represented by E. S. Stillman, A. F. Stillman and R. R. Harrison. Space 147.

Waugh Draft Gear Company, Chicago, Ill.—Waugh draft gear; draft gear and auxiliary buffer; Waugh platform buffer; Chaffee draw bar centering device; side bearings; grab iron thimbles; K-P lock nut. Represented by Anson L. Bolte, J. M. Waugh, Samuel T. Rowley, Charles H. Osborn, Edward E. Bolte and A. C. Davidson. Spaces 511-513.

Wayne Oil Tank & Pump Company, Fort Wayne, Ind.—Oil and gasoline storage equipment. Represented by S. D. Rickard and E. M. Denton. Space 9.

West Disinfecting Company, New York, N. Y.—West portable steam sterilizers—Two sizes; liquid soap dispensers; automatic drip machines; Vapodeo holders; fumigating lamps; spray pumps. Represented by Geo. L. Lord and H. E. Daniels. Space 26.

Western Railway Equipment Company, Saint Louis, Mo.—Linstrom locomotive syphon; "Acme" brake slack adjuster; "Western" steel carline; interchangeable journal bearings and wedges. Represented by Louis A. Hoerr, Sterling Campbell and Robert L. Langtim. Space 616.

Western Steel Car & Foundry Company, New York, N. Y.—Photographs in reception booth. Represented by J. F. MacEnulty, C. E. Postlethwaite, J. H. Mitchell, L. O. Cameron, H. P. Hoffstot, J. S. Turner, W. H. Wilkinson, M. S. Simpson, H. C. Hammond, G. W. Restine, Jr., H. H. Gilbert and F. L. Johnson. Spaces 545-601.

Westinghouse Air Brake Company, Pittsburgh, Pa.—Reception booth. Represented by A. L. Humphrey, Walter V. Turner, E. A. Craig, J. R. Ellicott, C. P. Cass, C. J. Olmstead and F. V. Green. Space 19 to 29.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.—Reception booth. Represented by R. J. Ross, H. C. Mode, R. L. McLellan, J. W. Crowley, J. H. Bryan, W. H. Patterson and H. W. Beaumont. Spaces 19 to 29.

Westinghouse Friction Draft Gear Company, Pittsburgh, Pa.—Reception booth. Represented by Robert Burgess, H. E. Chilcoat and S. J. Kidder. Spaces 19 to 29.

Westinghouse Lamp Company, Pittsburgh, Pa.—Reception booth. Represented by Elliott Reid and H. W. Rolinson. Spaces 19 to 29.

Westinghouse Pacific Coast Brake Company, Emeryville, Cal.—Reception booth. Represented by S. G. Down and C. C. Farmer. Spaces 19 to 29.

Westinghouse Traction Brake Company, Pittsburgh, Pa.—Reception booth. Represented by C. R. Ellicott and F. M. Nellis. Spaces 19 to 29.

Wheel Truing Brake Shoe Company, Detroit, Mich.—All kinds of abrasive brake shoes for operating upon locomotive tires and car wheels. Represented by J. M. Griffin. Space 523.

White American Locomotive Sander Company, Incorporated, Roanoke, Va.—Graham-White perfect sander. Represented by W. H. White and James Frantz. Space 316.

White Enamel Refrigerator Company, St. Paul., Minn.—Full size Bohn collapsible bulkhead for refrigerator cars. Represented by J. H. Burwell and K. G. Anderson. Space 190.

Wilson Remover Company, Newark, N. J.—Practical demonstrations of paint and varnish removers and machines used with removers for railways. Represented by J. MacNaull Wilson, D. J. Giles and J. T. Hartnagel. Space 202.

Wilson Welder & Metals Company, Inc., New York, N. Y.—Wilson system of electric welding equipment. Represented by S. A. Megeath, D. H. Wilson, Jr., W. E. Symons and W. S. Cozad. Space 145.

Wood Iron & Steel Company, Alan, Philadelphia, Pa.—Reception booth. Represented by L. G. W. Carpenter, W. H. Dickson, C. O. Hadly, W. W. Lukens, F. C. Milliken and G. H. Walsh. Space 11.

Woods & Company, Edwin S., Chicago, Ill.—Full sized body and truck bolster models, showing application of Wood's anti-friction side bearings and center plates. New types of side bearings covering "Tip Roller" body side bearing designs and self-centering truck side bearings for both passenger and freight service. Represented by C. D. Jenks, H. M. Perry and R. C. Fraser. Space 619.

Worth Brothers Company, Philadelphia, Pa.—boiler tubes. Represented by George E. Dix. Spaces 506-508-510-512.

Wyoming Shovel Works, The, Wyoming, Pa.—Red Edge track shovels and locomotive scoops. Represented by H. T. Potter, Russell Penny and C. H. Broward. Space 108.

Yale & Towne Manufacturing Company, The, New York, N. Y.—Railway signal padlocks; indicator padlocks; general service locks; dining car locking equipment; door closers; night latches; dead locks; switch locks; chain blocks of various types; trolleys for transporting hoists; electric hoists; chain parts in process; tested hooks. Represented by C. W. Beaver, W. C. Bigelow, W. A. Hall and J. H. Bricker. Spaces 142-144.

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WE GUARANTEE that of this issue 12,715 copies were printed; that of these 12,715 copies, 11,244 were mailed to regular paid subscribers to the Railway Age Gazette and the Railway Mechanical Engineer; 171 were mailed to advertisers, 300 were provided for counter and news companies' sales, new subscriptions, bound volumes, copies lost in the mail and office use; and 1,000 copies for distribution at Atlantic City.

THE RAILWAY AGE GAZETTE is a member of the Audit Bureau of Circulations.

Standardizing Passenger Car Parts

Baggage and express cars are frequently run through to destination over one or more foreign roads and when repairs are necessary they have to be made by one of these foreign companies. When a journal box, a coupler extension or head or a pedestal is broken on one of these cars, it is generally necessary to order the part from the home road and hold the car out of service while it is being shipped. Instances have been brought to our attention in which, owing to the recent freight congestion, cars have been held as long as six weeks awaiting these parts. Of course, this is an exaggerated case, as this long delay could have been prevented by shipment by express instead of freight, but delays of ten days or two weeks are bad enough and they are by no means uncommon. If such parts as these on passenger equipment cars which have to be operated in interchange service were standardized it would avoid any such delay, as the foreign road could then apply directly from its own stock a duplicate of the part that was broken. It would seem that there is ample justification for steps being taken toward the carrying out of such a standardization.

Suggestions Regarding M. C. B. Rules

We have heard a number of complaints about the character of the make-up of the Master Car Builders' Association book of interchange rules. In addition to this book the association has loading rules, tank car rules and safety appliance rules, some of which are not supplied to men outside the general mechanical offices, although all of them deal with matters with which car inspectors are concerned and with which they should be familiar. It is believed by many that the interchange rules should be so arranged that all other rules with which a car inspector should be familiar can be bound with them in one book, preferably of pocket size. The car inspector could then carry this book with him at all times and consult it on any matter pertaining to any of the rules of the association. The various rules of the association are intended for the guidance of the men who are on the firing line as well as those who are employed in the offices, and it is felt that if this suggestion were carried out it would enable the railroads to keep all of their men better posted on the nature of the various rules, with a consequent saving of time and money on many occasions.

Visiting the Exhibits in Groups

Last year the Santa Fe and the Rock Island both had their men go the rounds of the exhibits in groups in order that they might all get a comprehensive grasp of the value of the various devices on exhibition. It is believed that a procedure of this kind would be valuable for more roads to adopt. When a man goes alone to a booth to look over an exhibit he very frequently misses some point about it that would have been brought home to him, or that might place a different light on the value of the device, if he had been accompanied by others who were interested in it. If more of the railway men were to go to the exhibits in groups in this way, they would go away with a better knowledge of what the various exhibitors have for their use, and if they did not grasp all of the good points or see all of the faults in the devices themselves, it would be almost certain that a comparison of notes with the other representatives of the road, who were in the group, would clear up the matter for them. Moreover, if it were later proposed to adopt any such device, it would be possible for the management to obtain a more accurate idea of its value because of the number of men who had carefully investigated it together.

Brake Beam Safety Hangers

During the discussion of the report on brake shoe and brake beam equipment the safety hanger question was again brought up. This has been the cause of much anxiety on the part of car department officers for several years, and it has received attention from several committees of the association. The old type of chain safety hanger is manifestly worthless as a safety device, and there has been a tendency toward the development of a brake beam hanger which can be depended upon without the interposition of an additional safety device, if proper care is exercised to see that the hanger is replaced when worn beyond the point of safety. The determination of the exact condition of brake hangers, especially where they are hidden in the brakehead, is a difficult matter and must depend to a large extent on the judgment of the individual inspector. The emphasis which has been placed by some of the members upon the importance of the safety hanger does not, therefore, seem to be unreasonable. Even though the brake hanger may be entirely safe if removed and replaced at the proper time, there will always be opportunities for failures under certain conditions. The use of an adequate safety hanger will remove the element of danger from such failures, which otherwise are apt to be the cause of serious wrecks.

Brasses for Worn Journals

The application of standard brasses to worn journals as a cause of hot boxes was referred to in the discussion of the report on Standards and Recommended Practice during yesterday morning's session. On the New York Central it has been found that the projected width of the bearing surface of a 5½-in. by 10-in. journal is nearly twice that of the bearing of the standard brass on a journal reduced to 5⅛ in. in diameter. This is equivalent to nearly doubling the unit bearing pressure on the smaller journal. That such an increase may cause trouble

from hot boxes cannot be doubted, especially where a well-worn brass may be replaced on a worn journal already running hot by a new brass with its reduced effective bearing area. The provision of brasses with smaller diameter for use on worn journals was suggested as a means of reducing hot boxes from this cause. It is a question, however, whether or not this would prove an effective remedy. It would necessitate carrying two stocks of brasses for each size and would require careful supervision to prevent the use of small brasses on large journals. Under the conditions existing at the ordinary car repair point the result of the application of the remedy would often be worse than the disease. This matter has been referred to the Truck Committee for consideration, and if this remedy is not adopted some other means of improving the present situation may be found.

Hot Boxes on Freight Cars

Few subjects have received more discussion in the car department in past years than that of hot boxes on freight cars, and yet today this is still a serious problem on most roads. Journal box details and truck design have been improved from time to time to overcome the difficulty. More and more attention has been given to lubrication and the best method of packing the boxes. Is it not possible, however, that the designer is to some degree responsible for not having given more consideration to the increased speed at which freight trains are operated in these days? Fast freight trains are now being run on passenger schedule time on most trunk lines. It is not unusual to have journal boxes which have been given the most critical attention before leaving a terminal and are claimed to be in the best possible condition as far as the brass and lubricant are concerned, run hot before covering the next division. The allowable weight per square inch of bearing which may have proved satisfactory 15 or 20 years ago when trains were operated on the average at considerably lower speeds, may be far from satisfactory under present conditions. The question of the effect of speed on passenger car journals was touched upon in the discussion of the paper on Four-Wheel Trucks for Passenger Cars, at the December, 1915, meeting of the American Society of Mechanical Engineers at New York, and the suggestion was made that the effect of the increased speed on the required amount of journal bearing area might mean all the difference between using four- and six-wheel trucks on cars where the capacity of the four-wheel truck had been nearly reached. Would it not be wise for the Master Car Builders' Association to give this question some consideration in connection with its recommendation for the carrying capacity of the various M. C. B. standard axles?

Obstructing Committee Work

President MacBain's suggestion concerning the work done by the Committee on Settlement Prices for Reinforced Wooden Cars, might be applied to the work of some of the other committees, at least as far as reference to the action of the Association on the report of the committee is concerned. A great deal of the committee work is "the result of careful and conscientious study of the subject in hand from the broadest possible standpoint," and the members are too often prone to show in their discussion of reports and in the final action regarding their adoption a tendency towards a stand which is too much in the interest of their own road and not enough in the interest of the Association as a whole. One of the aims of the Association is to develop practices which can be standardized for all roads, and when a committee is appointed to report on any subject and brings in a report which it is evident is the result of a conscientious and businesslike consideration of the question from every standpoint, it is not to the interest of the Association and therefore not to the interest of the railroads as a whole to have members influenced in their action towards the report by consideration of local conditions only. If the benefits of unified practices are to be obtained by the railroads of the country, those practices on individual roads which do not harmonize will have to be abandoned even though the individual roads concerned suffer to some extent. It is, of course, desirable that any standards adopted be of a nature that will inflict as little hardship as possible on any one, consistent with obtaining the desired results, but we believe that it can safely be left to the committee to see that any recommendations are of a nature that will provide for this. It is by no means intended to suggest that the members should be deprived of their right to free and open discussion of all phases of the committee reports. On the contrary, a most open discussion is desirable, but those taking part in it should bear in mind the interests of all the railroads and not merely the local interests of their own road.

Dignifying the Car Inspector's Position

The car inspector's job is not an easy one. Never has this been more forcefully brought out than in the various articles which have been published on that subject in recent numbers of the Railway Mechanical Engineer. Long hours, heavy responsibilities, the necessity of a working knowledge of a most intricate set of interchange rules, not to mention familiarity with the safety appliances requirements, regulations for loading long material and the handling of explosives—all these factors, coupled with inadequate compensation, make his task a most difficult one. As one contributor has said, "The average man in all walks of life requires a lot of encouragement to keep up his best efforts, and the car inspector perhaps requires a lot more than the average and needs more judicious sympathy than usually comes his way." Harvey DeWitt Wolcomb, in an article in the January, 1916, issue of the Railway Mechanical Engineer, suggests that incentives be offered for good work and that as a grand prize the inspector be taken "to the Master Car Builders' convention. Every car inspector in the United States would like to attend one of these conventions and see for himself just how the car interchange rules are gotten up." It cannot be questioned that this would prove a splendid investment to a railroad, not only from the greater efficiency of the individual or individuals who were sent to the convention, but from the increased efficiency of the entire staff of car inspectors who would put forth their best efforts to secure a like reward in the following years. The inspiration of meeting with and coming in contact with others with common interests; the educational value of the exhibits, and the technical and practical knowledge gained in the convention hall would never be forgotten. Examples are not at all uncommon of men whose early education has been very limited, who, because of the encouragement received by attending the conventions have fitted themselves for advancement and are now well equipped and filling responsible positions.

CAR DEPARTMENT APPRENTICE COMPETITION

WE have frequently and forcefully called attention to the need of some comprehensive action being taken to develop men for car department service. The motive power department of some roads has given careful attention to the training of apprentices for that department, but almost invariably the car department is left to shift for itself. The members of the Chief Interchange Car Inspectors' and Car Foremen's Association have had this lack of educational facilities and means of training men for the car department brought home to them very forcefully because of the positions they occupy, which bring them in close contact with car department employees of all classes.

This association has done remarkably good work in the

past and it is constantly enlarging and broadening. It feels that something must be done to improve the quality of the personnel of the car department and with this in view it has been decided to offer three prizes—a first prize of $25, a second prize of $15, and a third prize of $10—for the three best papers on Car Department Apprenticeship Courses. These papers are to be sent to the secretary of the association, W. R. McMunn, general car inspector, New York Central, Albany, N. Y., and should be in his hands not later than August 1, 1916. A special committee of the association is being appointed to act as judges, and the three prize-winning papers will be read at the next convention of the association, which is to be held in Indianapolis, Ind., October 3, 4 and 5 of this year. The competition is open to all; it is not necessary to be a member of the association in order to compete.

The members of the Master Car Builders' Association are familiar with the work of the Chief Interchange Car Inspectors' and Car Foremen's Association. Many car department men are members of both associations and we would urge that all car department men, and particularly members of the M. C. B. Association, take all the steps possible to assist in this competition. The M. C. B. Association membership is thoroughly familiar with the need of providing high grade material for the car men of the future, and they should welcome any opportunity of this kind which helps toward attaining this end.

LIFE OF STEEL FREIGHT CARS

THE discussion on the report of the Committee on Settlement Prices for Reinforced Cars developed some interesting data concerning the life of steel freight cars and the cost of repairs, but there certainly is a great variation in the ideas of the members regarding the life of an all-steel car. M. K. Barnum, superintendent of motive power of the Baltimore & Ohio, in discussing the report raised the question of the proper depreciation for use in arriving at settlement prices for all-steel cars. Mr. Barnum has investigated this matter with considerable care, and in an article published in the *Railway Age Gazette*, March 3, 1916, page 389, and in the *Railway Mechanical Engineer* for March, 1916, page 129, he gives as his conclusion that the average age of steel gondola and hopper cars will probably be about 18 years and that the depreciation on such cars should be calculated at about 5 per cent. It was brought out in the convention, however, that the Pennsylvania Lines are now making heavy repairs to cars that have already been in service 18 years, and judging from the present condition of the cars their life will probably reach about 30 years.

The statement of D. F. Crawford that the Pennsylvania System now has in service 130,000 all-steel cars, the first of which were built in 1898, and that of this total 97 cars have been destroyed on foreign lines, certainly bears out the contention that the steel car must be designed and built along different lines from the old wooden car if satisfactory service is to be obtained from it. The Pennsylvania has always contended that ample strength should be provided even at the expense of some increase in weight, and when we compare the service which they are obtaining from their steel freight equipment with that of some of the lighter and cheaper designs of cars the argument certainly seems justified. Regardless, however, of the character of the construction, there is a point which was brought out in Mr. Barnum's article which we feel should be given much more attention; that is, the matter of proper painting of steel equipment. If the railways are to get the maximum life from any steel car it must be well protected with a good quality of paint. If a car is repainted when the steel becomes exposed to the weather a longer life will be obtained from some of the parts before they require renewal, with a consequent saving in repair expense.

TO-DAY'S PROGRAM

Discussion of reports on:

Couplers	9.30 A. M. to 10.30 A. M.
Draft gear	10.30 A. M. to 11.00 A. M.
Safety appliances	11.00 A. M. to 11.15 A. M.
Loading rules	11.15 A. M. to 11.45 A. M.
Car construction	11.45 A. M. to 12.15 P. M.
Car trucks	12.15 P. M. to 12.45 P. M.
Train lighting and equipment	12.45 P. M. to 1.30 P. M.

ENTERTAINMENT

10.30 A. M.—*Orchestral Concert.* Entrance Hall, Million-Dollar Pier.

3.30 P. M.—*Orchestral Concert.* (Card party for Ladies.) Entrance Hall, Million-Dollar Pier.

9.30 P. M.—*Informal Dance.* Special Feature. Ball Room, Million-Dollar Pier. Don Richardson, New York Orchestra.

LOST

Miss M. E. Tucker, badge 2087, lost a gold bracelet on the Million Dollar Pier Wednesday morning.

FOUND

Badges 2779 and 3760 have been found. Apply to John Conway, secretary of the Supply Manufacturers' Association.

A BIG EXHIBIT

Up to 12 o'clock noon on Wednesday, June 14, 261 exhibitors had enrolled, as against 222 at the close of the convention in 1915.

R. S. M. A. NOMINATION

The Nominating Committee of the Railway Supply Manufacturers' Association presents the names of Edwin H. Walker, vice president, Standard Coupler Company, New York, for president, and Le Grand Parish, president of the American Arch Company, for vice president.

REGISTRATION

The Enrollment Committee wishes to state that the official registration lists have appeared and will appear a day earlier than usual this year. Book No. 1 was issued and distributed Wednesday. Books Nos. 2 and 3 will appear on Thursday and Friday, respectively, and there will be no book Saturday. In previous years the lists were issued on Thursday, Friday and Saturday.

RAILWAY EQUIPMENT MANUFACTURERS

A meeting of the executive committee of the Railway Equipment Manufacturers' Association, associated with the Traveling Engineers' Association, will be held at the Shelburne Hotel at 1 p. m. Friday, June 16. W. E. Brumble, the secretary of the association, is enthusiastic over the prospects for the exhibit at Chicago next September.

PENNSYLVANIA TRANSPORTATION

The following notice as to return transportation over the Pennsylvania was read at the meeting yesterday morning:

Railroad members of the Master Car Builders' and Master Mechanics' Associations desiring transportation home over lines of the Pennsylvania Railroad, or the Pennsylvania lines west of Pittsburg, will be provided with such transportation if they will submit their requests through J. T. Wallis, general superintendent motor power, Pennsylvania Railroad lines East of Pittsburg, and D. F. Crawford, general superintendent of motive power, Pennsylvania lines West of Pittsburg.

In accordance with the requirements of the law, this transportation must be limited to bona fide railroad officials only and cannot include representatives of boat lines, car lines or switching roads operated by industries.

CHICAGO & NORTH WESTERN CLUB MEETING

The Chicago & North Western Club will hold its annual "Get-To-Gether Luncheon" this year at the Shelburne Hotel. Once a Northwesterner, always a Northwesterner; hence a goodly gathering of loyal men, present and "ex," will gather on the porch of the Shelburne at 12.30 o'clock Saturday. They will find T. W. Ashton, chairman of Committee on Arrangements, with everything in readiness for an hour of good old Chicago & North Western fellowship.

M. C. B. BASEBALL CLUB

The following members of the M. C. B. baseball "invincibles" have been named for the game next Saturday afternoon. They will report at Room 305, Hotel Dennis, any time Saturday morning for their suits.

REGULAR PLAYERS

Position	*Name*	*Railroad*
Catcher	Bert Robinson	Erie.
1st Baseman and Field Captain	Samuel Rigling	Pennsylvania.
Right Fielder	B. F. Goodman	B. & O.
Shortstop	Edwin Kelsh	Erie.
Center Fielder	C. S. Schwartz	St. Louis Refrigerator.
3d Baseman	R. C. Merritt	Erie.
2d Baseman	F. J. Mueller	B. & O.
Left Fielder	G. R. Kreider	Pennsylvania.
Pitcher	Thos. Padgett	Erie.

PINCH HITTERS AND UTILITY PLAYERS

Mascot	W. L. Wilt	Penna. Lines.
Water Boy	J. W. Senger	New York Central.
Bat Boy	Geo. F. Laughlin	Armour Car Lines.
First Aid Boy	E. G. Chenoweth	C. R. I. & P.
Manager	A. LaMar	Penna. Lines.

CARD PARTY FOR LADIES THIS AFTERNOON

A card party for the ladies will be held on the exchange floor of the Marlborough-Blenheim at 3.30 o'clock this afternoon. The game will be Euchre. Prizes will be awarded only to ladies of the immediate family of members of the M. C. B. Association, the M. M. Association or the R. S. M. Association, or guests with the official ladies' badges. The following rules will be observed:

The joker will not be used.

The rank of the cards, from highest to lowest, is as follows: Trumps; Jack, left bower (Jack, same color, not trumps), Ace, King, Queen, ten, nine, eight, seven.

Rank of suits same color, but not trumps; Ace, King, Queen, ten, nine, eight, seven.

Rank of suits, different color from trumps; Ace, King, Queen, Jack, ten, nine, eight, seven.

SCORING

The object of the game is to win tricks.

If partners make the trump and win three tricks out of five, they score one point. If they win all five tricks, they score two points. If they fail to get three tricks, they are euchred and their adversaries score two points.

PLAYING

The player facing east (toward the ocean) will deal first at each table.

Deal five cards, in rounds of two and three cards and turn the top remaining card for trump.

Each player in turn, beginning at the dealer's left, has the privilege of passing or ordering up the trump card, which, in latter case, becomes part of the dealer's hand and he must discard one. If all pass, the dealer can either take up the trump or turn it down. If he takes it up, three tricks must be taken by the dealer and his partner, or they are euchred. If the dealer turns it down, that suit cannot be trumps on that deal. The player to the left of the dealer has the privilege of naming some other suit for trumps, or passing again. If all pass the second time, the same dealer will deal again.

The suit settled, the person at the left of the dealer leads any card he wishes. If any player revokes, the hands are abandoned and the adversaries score two points.

Lone hands will not be played or allowed. Four hands will be played; highest score wins the game. Ties will be decided by cutting, the higher card wins, ace high. The value of the jack in cutting is below the queen.

Distribution of prizes will be decided on games.

No table will commence playing (even for practice) until the starting bell rings. One bell announces head table has finished four hands and is ready to move. All will remain seated until all tables have finished the four hands and scores have been recorded on all cards, by the committee. Two bells at the head table announce all move. The winning pair at each table will move toward the head table (the winning pair at head table moves to foot table) and all change partners.

FLAG DAY

The large number of flags in evidence on the pier yesterday give some indication of the growing popularity of Flag Day. Doubtless this is intensified by the troubles abroad and the problem of preparedness to which many railway men and railway supply manufacturers are giving more and more attention.

In his address of welcome yesterday Mayor Bacharach recited the following poem, which met with a most enthusiastic reception:

"Your Flag and My Flag, Oh, how she waves to-day
O'er your land and my land, and half the world away;
Rose red and blood red, with stripes that gleam;
Snow white and pure white, the good forefathers' dream;
Sky blue and true blue, with stars that gleam aright,
A glory guiding all the day, a shelter through the night.
Your Flag and My Flag, oh, how much it holds of your land
and my land secure within its folds,
And how your heart and my heart beats quicker at its sight;
Sun-kissed and wind-tossed, the red, the blue and the white,
The one flag, the great flag, the flag for me and you,
Glorified all else beside the red, the white and the blue."

JOHN KIRBY

In his address President MacBain reviewed the life work of John Kirby in the following words:

"The passing of John Kirby, formerly master car builder of the Lake Shore & Michigan Southern, on December 8, 1915, at Adrian, Mich., marked the end of a long and useful life. Mr. Kirby had a remarkable record, having been in railroad service continuously for sixty-one years and seven months. As I know it surely will be interesting to all of us, I am going to read his whole record extending from May, 1848, to January 1, 1910, on which last named date Mr. Kirby was pensioned.

"Mr. Kirby was born in Charlton, Oxon, England, October 22, 1823. From May, 1848, to 1853 he was a car builder in the service of the Syracuse & Utica at Oneida, N. Y. He then entered the service of the New York Central & Hudson River as a foreman at Syracuse, N. Y. He went with the Lake Shore & Michigan Southern as foreman car department July, 1854, and was promoted to master car builder September 1, 1858. He was made general master car builder with office at Cleveland, Ohio, October 15, 1870. He returned to Adrian, Mich., October 1, 1892, as superintendent car construction, and remained in that position until he retired, January 1, 1910.

"Mr. Kirby was one of the original members of this association and was its president during the year 1891-1892, and throughout his life as a railroad man was one of the association's strongest advocates and staunchest supporters. Indeed, much of what the association is today can be attributed to the efforts of John Kirby and a few others of his type."

Master Car Builders' Association Proceedings

Wednesday's Session, Including the President's Address and Several Committee Reports With Discussions

Freight Car Repair Shop at McKees Rocks, Pa.; Pittsburgh & Lake Erie

THE first session of the fiftieth annual convention of the Master Car Builders' Association was held in the Greek Temple on Young's Million Dollar Pier, Atlantic City, Wednesday, June 14, 1916.

The president, D. R. MacBain, of the New York Central Lines West of Buffalo, called the meeting to order at 9.40 o'clock. The Reverend Dr. Newton W. Cadwell, pastor of the Olivet Presbyterian Church, of Atlantic City, invoked the Divine Blessing. The convention was welcomed to the city by Mayor Bacharach.

PRESIDENT MacBAIN'S ADDRESS

I have been particularly impressed during the past few years with the lively interest taken by the younger men in the big problems of the Association, and it must appeal to all who are observing that the Association is in good health, so to speak, and in a fair way to prosper and achieve even greater things in the future than it has in the past. However, while our past has been such that we may rightly feel proud of it, that fact does not mean that we can rest on our laurels.

The matter of car interchange—the responsibility for damage and provision for necessary repairs—in my opinion, is one that might be improved upon; and it has been suggested that something that would lessen the amount of accounting and cross-accounting that now exists, is much to be desired. I therefore offer for consideration in the future the idea—not original, of course—of complete owners' risk as a means toward that end, with the further suggestion that a committee be appointed by this Association to report at the next convention on the feasibility of such a plan. If this suggestion meets with approval, this same committee might be instructed to report also on complete users' risk.

Among the committee reports that should have our earnest and broad consideration is that of the Committee on Settlement Prices for Reinforced Wooden Cars. In looking over the advance copy of the report made by that Committee, I am impressed with the thought that it is the result of careful and conscientious study of the subject in hand from the broadest possible standpoint; and while what that Committee has recommended might not be the ideal arrangement, I trust all who are interested will take a good, sound, broad, business view of the matter and adopt the Committee's recommendations as a start that will go a long way toward eliminating the bad conditions now existing. No one would be seriously hurt by adopting the recommendations of this Committee just as they have written them, in my opinion, and the stamp of approval of this convention on their work, it seems to me, is merited.

While the question of standardization of types of cars is important, in my opinion it is also of much consequence that thorough and serious consideration be given to capacities, both carrying and cubical, insofar as clearances and consistent wheel loads will permit. I will not attempt to go into detail more than to remind you of the legislation—either attempted or proposed—in many of the states during the past two years. Some of the important roads in the country have made a splendid showing on certain types of their equipment, but there is much room yet for further and useful development along this line. The question of terminal facilities, as well as other matters, should have our best thought and attention in considering the whole subject, and in order that the present facilities—which in many instances cannot be increased without tremendous cost, and consequently a heavier tax on each car handled—may be made to serve as well in the future as in the past, we should aim to handle the maximum of freight on the minimum of track space, so far as consistent and practicable.

The work of the Coupler Committee during the past several years has been such as to warrant our fullest appreciation, and it is believed that when its report for this year has been presented it will have solved one of the Association's most serious and important problems and will have provided for this feature covering a long time in the future.

The Brake Beam Committee will, no doubt, in its report take a long step toward putting the subject on a better basis

than now exists, and as a step in advance, I suggest that you give their report your earnest thought and consideration, and then, when the questions involved are submitted by letter ballot, as I feel sure they will be, that you vote for their adoption and thereby add another important item to the list of progressive movements toward complete standardization of the freight-carrying equipment of this continent.

D. R. MacBain
President, M. C. B. Association

R. W. Burnett
Vice-President, M. C. B. Association

The Committee on Specifications and Tests for Materials will, at this meeting, I feel safe in saying, present a report of which this Association justly may feel proud, as I am sure it will be the last word of the art in everything desirable in that line, and the most complete of its kind ever presented.

I desire also to call your attention to the work done by the Committee on Loading Rules. No better work has ever been done for this Association, despite the fact that it was accomplished not without much discouragement in the way of objections on the part of shippers and others, and today the rules are more satisfactory than ever before.

President Crawford, in 1915, referred to the question of further development in air brake design, construction and maintenance in order that the best possible apparatus might be available for the handling of long trains successfully and smoothly. I can but say that this subject should have our best thought and effort, and so far as possible our support should be given to the Air Brake Association and to the manufacturers of air brake equipment in their efforts to better the service in this respect.

It seems fitting at this time to remind the members of this Association of the necessity for vigilant and well-directed effort in the work of winding up the application of safety appliances. The extension of time granted by the Government last year was won only after a great deal of effort on the part of the managements of the roads we represent, and I feel quite assured that our superiors expect us to complete this work properly before the expiration of the extended time limit. The action of the Executive Committee in bringing before this convention a resolution fixing the time at which cars shall not be accepted from owners, and not accepted at all in interchange unless equipped with United States safety appliances or United States safety appliances, standard, was taken after a long and careful discussion of the whole subject, and it is hoped that the action of this committee will receive full and earnest support toward bringing about the satisfactory results which it had in mind when the resolution was passed.

C. E. Chambers
VicePresident, M. C. B. Association

There is a growing sentiment that the time has come when a better condition in the matter of the fit between the journal and journal-bearing should be developed, the idea being that the standard contour bearing, when placed upon a journal that has been reduced by turning to the extent of

one-eighth of an inch or more, is a very bad mechanical proposition when viewed from the modern operating standpoint. It is thought that this Association should make this

T. W. Demarest
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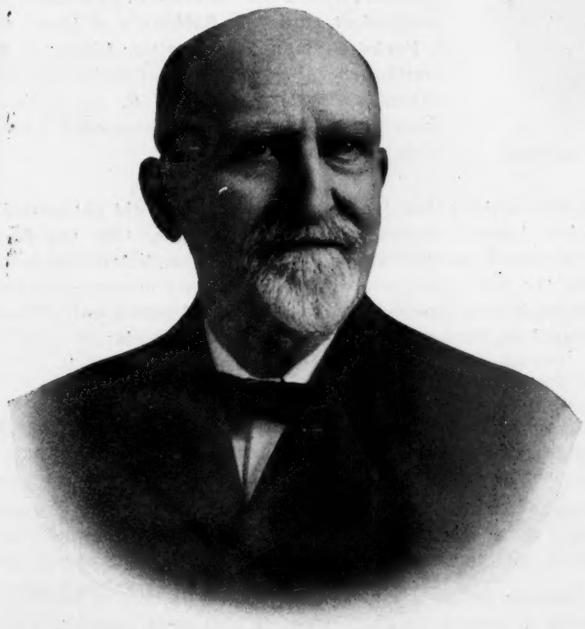
matter the subject of a comittee report and that a committee should be appointed to devise a new set of rules to govern. I concur in this thought and recommend the subject for your consideration.



J. S. Lentz
Treasurer, M. C. B. Association

In thinking over the achievements of the past and acting upon a suggestion made by one who perhaps has done more for the Association in the past 25 years than any other individual, it is thought that a committee should be appointed to write up the career of this organization historically, outlining as far as possible the conditions that existed fifty years ago and at various periods subsequently, concluding with a good, comprehensive idea of the present state of the art.

The work of the Arbitration Committee should have our attention, either now or in the near future. This year the committee has held several conferences with committees of other associations, such as the American Railway Association and the Association of Transportation and Accounting Officers, with the result of bringing each association and its work into closer harmony and tending to better operating conditions on American railways. The work with which this committee has to deal has become of such volume during the past three or four years as to very materially hamper its members in looking after their affairs at home. It is now common for a session to consume two, three, or four days, and I would suggest that you consider the advisability of

J. W. Taylor
Secretary, M. C. B. and M. M. Associations

creating another committee to deal with a few of the matters, outside of arbitration cases, that now are submitted to this Committee.

I desire again to bring before you a subject that has been touched upon by many of my predecessors: the advisability of re-editing and re-arranging the book of interchange rules. A good committee could, in my opinion, very much improve on the book now in use, by putting together that which ought to be together, by eliminating references and cross-references, and by amplifying and simplifying each rule, as far as consistent and desirable.

The time in which all cars must be equipped with metal brake beams has been extended to October 1, 1918, and no further extension of time should be allowed in bringing about this very desirable reform.

The question of continuous draft rods should have our attention at once so that this source of annoyance and trouble will be eliminated at the earliest possible moment.

The growing tendency to use non-standard material in the construction and repairs of cars should be curbed, and I

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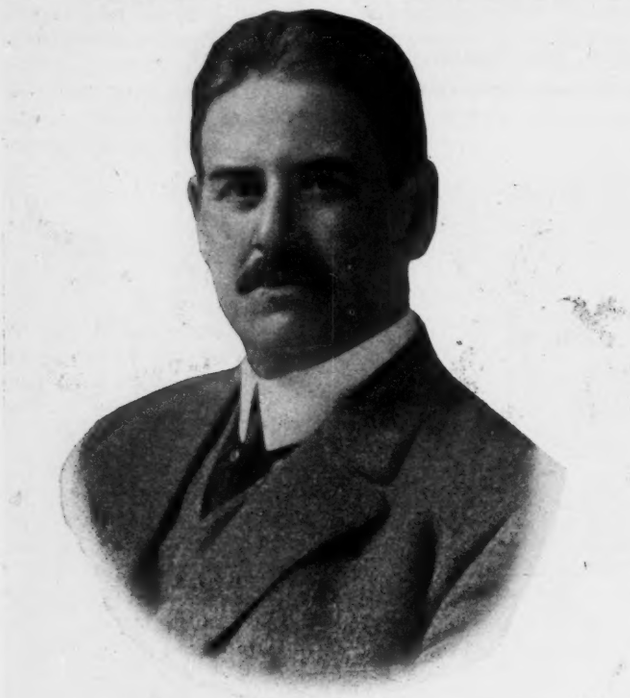

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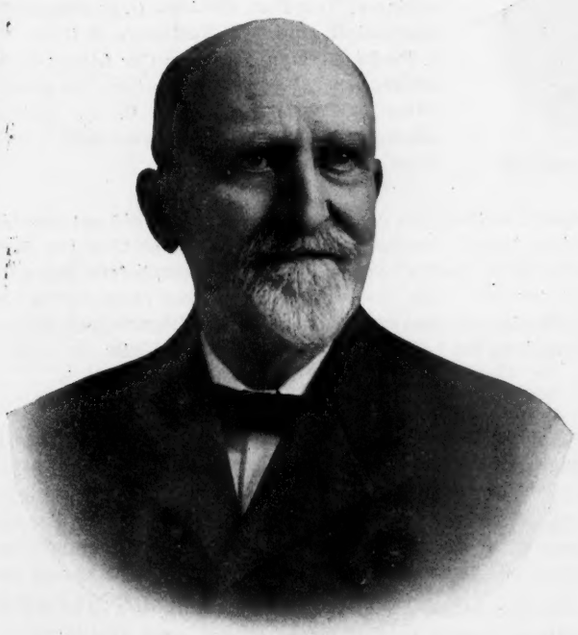

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The question of continuous draft rods should have our attention at once so that this source of annoyance and trouble will be eliminated at the earliest possible moment.

The growing tendency to use non-standard material in the construction and repairs of cars should be curbed, and I

take this opportunity of appealing to the members to correct the practice insofar as it is within their power to do so.

The committee in charge of the subject of welding cast steel parts, such as side frames, bolsters, etc., should be continued, report to be made at the next convention. I make this recommendation because of the great strides that have been made in the past few months toward efficiency along this line. The welding of roof sheets and building up the wearing parts of couplers and knuckles could also be dealt with by this committee.

The number of cars represented in the Association, according to latest reports sent in this year, is 2,853,482 as against 2,809,562 last year, or an increase of 43,920 cars.

ASSOCIATION BUSINESS

Secretary Taylor presented his report, which showed that the present membership of the Association consists of 440 active members; 521 representative members; 13 associate members, and 20 life members. The number of cars represented in the Association at the present time is 2,853,482, being an increase over 1915 of 43,920. The receipts during the year were $34,080.69, expenses $25,367.51, leaving a balance of $8,713.18. The report was referred to an auditing committee consisting of T. J. Burns, M. C.; J. Borrowdale, I. C., and J. H. Minton, C. R. I. & P.

The Secretary: At a meeting of the Executive Committee held last evening, they proposed that the annual dues of active members be $5 per annum, the same as heretofore, and that for the representative members they be $6 per vote per annum.

(The recommendations of the Executive Committee in fixing the dues for the coming year were adopted.)

NOMINATIONS

The committee suggests the following:

For President: C. E. Chambers, S. M. P., C. R. R. of N. J.; *For Vice-Presidents*: T. W. Demarest, S. M. P., Penna. Lines West; James Coleman, S. C. D., Grand Trunk R. R., and G. W. Wildin, Mech. Supt., N. Y. N. H. & H. R. R.; *For Treasurer*: J. S. Lentz, M. C. B., Lehigh Valley R. R.; *For Executive Members*: S. Lyon, M. C. B., P. & L. E.; J. C. Fritts, M. C. B., D. L. & W. R. R., and C. B. Young, Mechanical Engineer, C. B. & Q.

The report was signed by:—F. W. Brazier, chairman, (N. Y. C.); A. W. Gibbs, (Penna.); F. H. Clark, (B. & O.); F. F. Gaines, (C. of Ga.), and J. J. Hennessey, (C. M. & St. P.).

(The report was accepted.)

Report on Standards and Recommended Practice

During the past year this committee acted on several different subjects, of which 12 have been recommended to the association for adoption by letter ballot. As in the past the work of the committee has had to do principally with the study of journal box standards. The committee also presents a standard for the marking on freight equipment cars, which has been under consideration for several years.

T. H. Goodnow, assistant superintendent of the car department of the Chicago & North Western, has been chairman of this committee for the past six years. He commenced railway work on the Lake Shore & Michigan Southern at Norwalk, Ohio, in 1881 and was made general foreman of the car department of that road at Toledo, Ohio, in 1904. He was appointed master car builder in 1906. In 1912 he went with the Armour Car Lines as general superintendent and during the same year he accepted the position he now holds. The other committee members are W. H. V. Rosing, assistant to vice-president, St. Louis & San Francisco; C. E. Fuller, superintendent motive power, Union Pacific; A. R. Ayers, chief mechanical engineer, New York Central; O. C. Cromwell, mechanical engineer, Baltimore & Ohio; O. J. Parks, German-American Car Lines; R. E. Smith, general superintendent motive power, Atlantic Coast Line, and C. F. Thiele, general car inspector, Pennsylvania Lines West of Pittsburgh.

T. H. Goodnow, Chairman

AFTER due consideration of present Standards and Recommended Practices of the Association together with replies from members to the Circular of Inquiry, also requests involving Standards presented through the Secretary, your committee respectfully submits the following report:

[Editor's Note:—In abstracting this report minor changes in the drawings and in the wording of the standards which the committee recommended together with suggestions for changes which did not meet with the approval of the committee, have been omitted.]

JOURNAL BOX AND DETAILS. (Standard.)
Pages 708-711

For Journals, 4¼	by 8 in.	Sheet M. C. B. 6.
For Journals, 5	by 9 in.	Sheet M. C. B. 9.
For Journals, 5½	by 10 in.	Sheet M. C. B. 12.
For Journals, 6	by 11 in.	Sheet M. C. B. 12-C.

A member suggests redesigning the fillet of M. C. B. journal bearings in order to give clearance between the fillet on axle and the radius on journal bearing, as indicated in Fig. 1. The committee concurs in this recommendation.

JOURNAL BOX AND DETAILS. (Standard.)
Pages 709-711

For Journals, 5	by 9 in.	Sheet M. C. B. 8.
For Journals, 5½	by 10 in.	Sheet M. C. B. 11.
For Journals, 6	by 11 in.	Sheet M. C. B. 12-B.

A communication was received from the Virginia Equipment Company, stating that dust-guard recess in box did not provide sufficient lateral clearance for dust guards, so that the dust guards would strike the wall of the recess before the axle struck the box. The committee concurs, and recommends the following lateral clearance between axle and inside wall of box, measured on the horizontal center line of the axle:

For Journals, 5	in. by 9 in.....	5/16 in.
For Journals, 5½	in. by 10 in.....	⅜ in.
For Journals, 6	in. by 11 in.....	⅜ in.

and further recommends that normal clearance betweeen vertical edge of dust guard and wall of box should be as follows:

For Journals, 5	in. by 9 in.....	7/16 in.
For Journals, 5½	in. by 10 in.....	½ in.
For Journals, 6	in. by 11 in.....	½ in.

JOURNAL BOX AND DETAILS. (Standard.)
Pages 709-710. Sheet M. C. B. 9

A member suggests that wedges for use on cars of 80,000 lb. capacity or greater be drop-forged or cast steel, abolishing the use of malleable iron.

The committee does not concur in this recommendation.

JOURNAL BOX AND DETAILS. (Standard.)
Page 710. Sheet M. C. B. 12

A member calls attention to the 5½ in. by 10 in. journal bearing as not being sufficiently thick to prevent the brass from springing under heavy loads.

The committee refers this to the Committee on Car Trucks.

JOURNAL BOX AND DETAILS. (Standard.)
Page 710. Sheets M. C. B. 10, 11 and 12

A member suggests removing the ½ in. radius cut-out in the journal-bearing stop lug at the side of the journal box. The committee does not concur, but recommends that this be made optional both with the box and the journal bearing.

DUST GUARDS. (Standard.)
Page 720. Sheet M. C. B. 15

A member suggests that the reinforcement shown for the 6 in. by 11 in. dust guard should also be shown for the other dust guards. The committee does not concur in this suggestion, but recommends eliminating the reinforcement from the 6 in. by 11 in., making it the same as the other dust guards.

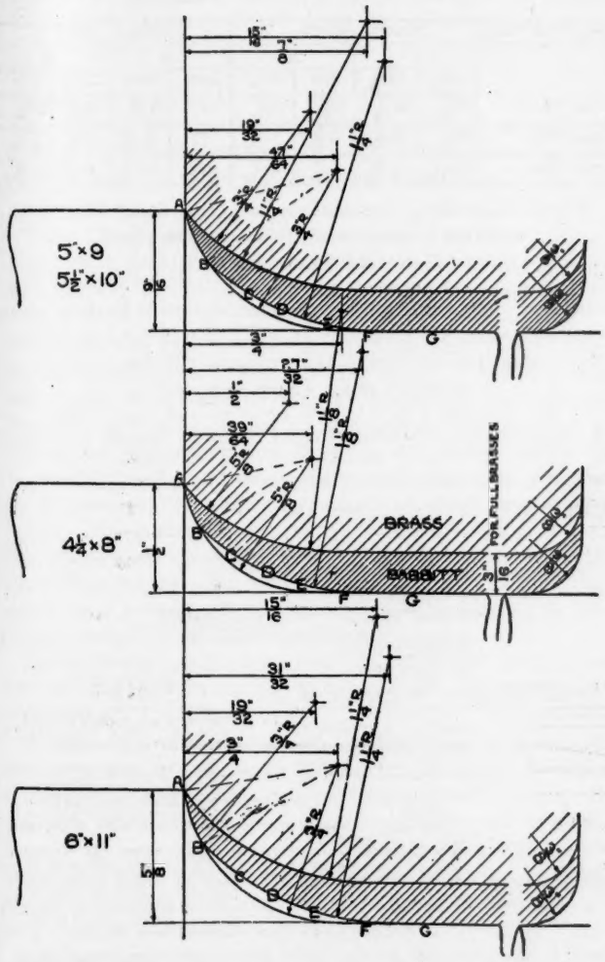


Fig. 1.—Redesigned Fillet for M. C. B. Journal Bearings

DUST GUARDS. (Standard.)
Page 720. Sheet M. C. B. 15

A member suggests removing the words "Soft wood" from the 6 in. by 11 in. guard and adding a note, "Dust guards to be made of soft wood," which latter note should apply to all of the guards. The committee does not concur in this, but recommends the addition of a note applying to all guards, to read, "Dust guards to be made of wood," and removing the words "soft wood" from the 6 in. by 11 in. journal.

WHEEL DEFECT AND WORN COUPLER LIMIT GAGE. (Standard.)
Sheet M. C. B. 16. Pages 722 and 817

A member suggests changing the gage so as to permit gaging of worn collars on axles. The committee concurs in this recommendation, changing the gage as indicated in Fig. 2, and changing the name of this gage to standard wheel defect, worn axle collar and worn coupler gage.

BRAKE HEAD AND SHOE. (Standard.)
Page 739. Sheet M. C. B. 17

A member calls attention to brake head with two points of suspension—one on the center line of the head, and the other at a point above the center line, stating that with the upper point of suspension the hanger has a tendency to jump out of the slot and crowd in against the key, causing the upper portion of the head to either break or become distorted, and that with the center-hung head and long hanger more even wear of brake shoe is obtained, and recommends that all new cars built after January 1, 1917, must be so equipped that the brake beam will hang from the center of the head.

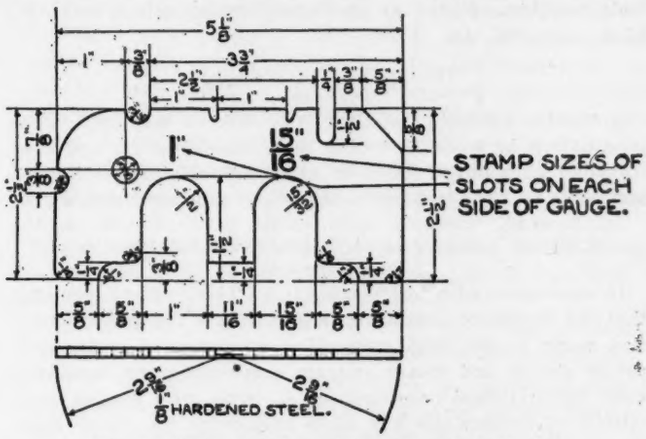


Fig. 2.—Wheel Defect, Worn Coupler Limit and Worn Journal Collar Gage

The committee does not concur in this recommendation, but proposes slight changes in the head, as indicated in Fig. 3.

AIR BRAKES—GENERAL ARRANGEMENT AND DETAILS. (Standard.)
Pages 745-746. Sheet M. C. B. 18

A member suggests the advisability of changing the location of angle cock on freight-train equipment from the present Standard of 13 in. back from the inside face of knuckle to 10 in. The committee concurs in this recommendation.

AIR BRAKES—GENERAL ARRANGEMENT AND DETAILS. (Standard.)
Pages 745-746. Sheet M. C. B. 18

A member suggests that bottom rod connections, as shown on this sheet, be changed from one hole on each end to two holes on each end; also, that rods in future be not less than 1⅞ in. diameter, instead of 1⅝ in.

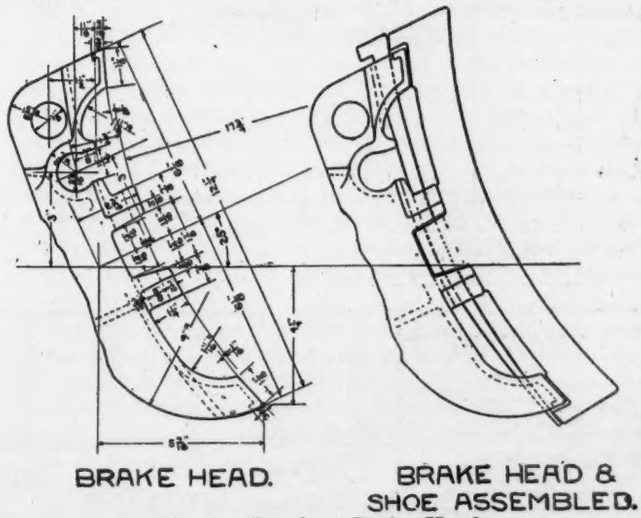


Fig. 3.—Standard Brake Head

The committee does not concur in this recommendation as a whole, but does recommend two holes (1¾ in. centers) in jaw at one end, for use with cast-iron wheels.

HEIGHT OF COUPLERS. (Standard.)

Page 830

A member calls attention to the height of 35 in. as shown for passenger-equipment cars, and suggests that this be changed to 34½ in. The committee concurs in this recommendation.

MARKING ON FREIGHT-EQUIPMENT CARS. (Standard.)

Pages 836-839. Sheet M. C. B. 26-A

The committee herewith proposes standard marking for freight-equipment cars, as covered by revised Sheet M. C. B. 26-A. (See Fig. 4.)

PIPE UNIONS. (Standard.)

Page 840

A member suggests that threads on nuts of ¼-in. and ⅜-in. pipe unions be made 14 to the inch, instead of 18, and that threads on the nut of the ¾-in. union be made 11 to the inch, instead of 14. The committee concurs in this recommendation.

PLATFORM SAFETY CHAINS. (Recommended Practice.)

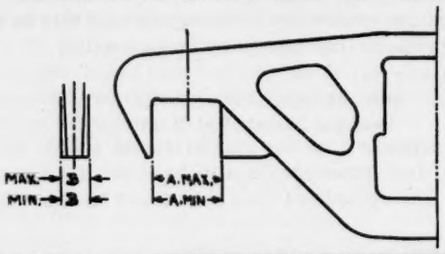
Pages 832-833

In accordance with instructions from the Secretary, advising that the Executive Committee referred back the recommendation made to the 1915 convention covering the location of safety chains and steam and air connections for passenger cars, which it was recommended be given to a special committee, this committee has again considered the entire question and again renews its recommendation that a special committee be assigned to investigate this matter and report, for the reason that answers to our inquiries indicate that there is so much involved that it is the work of a special committee.

PERMANENT STAKE POCKETS. (Recommended Practice.)

Page 953

The chairman of the Committee on Loading Rules referred to this committee a communication regarding size of stake



CAPACITY OF TRUCK	TRUCK FRAME				JOURNAL BOX			
	A		B		A		B	
	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN
40 TON	9 3/16"	9 1/16"	3 5/8"	3 5/16"	9"	8 15/16"	3 3/4"	3 11/16"
50 TON	9 3/16"	9 1/16"	3 3/4"	3 9/16"	9"	8 15/16"	3 3/4"	3 11/16"
70 TON	10 11/16"	10 9/16"	4 1/2"	4 7/16"	10 1/2"	10 7/16"	4 5/8"	4 9/16"

Fig. 5.—Limiting Dimensions for Cast Steel Design of Side Frames with Pedestal Jaws and Boxes of These Frames

pockets on flat cars, with a recommendation that a stake pocket of standard dimensions be adopted 4 in. by 5 in. in size.

The committee concurs in this recommendation.

JOURNAL BOX. (New Subject.)

For Journals, 5 by 9 in., 5½ by 10 in. and 6 by 11 in.

A member calls attention to the necessity for M. C. B. box

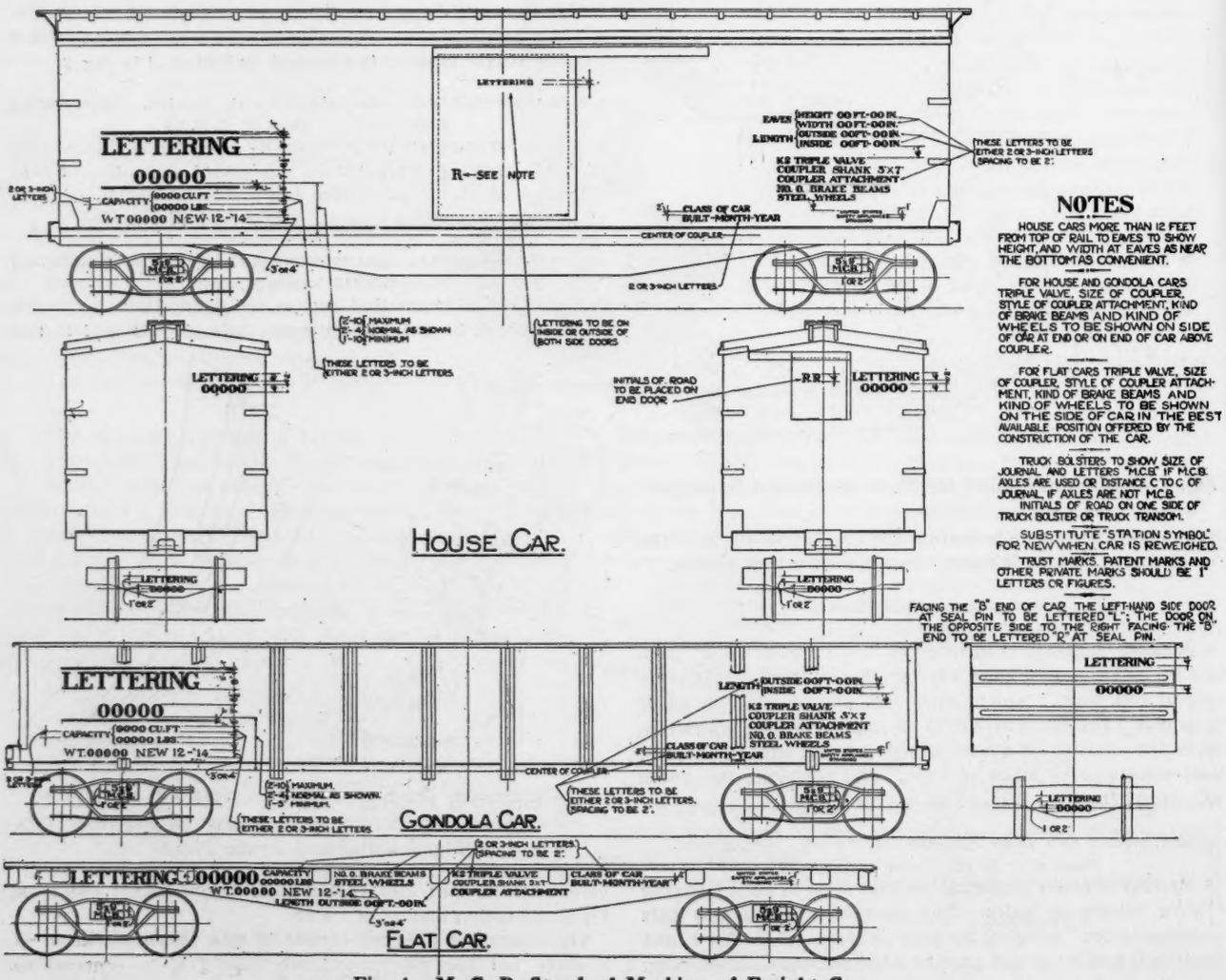

LETTERING
00000
CAPACITY 00000 CU.FT. 00000 LBS.
WT. 00000 NEW 12-'14
R—SEE NOTE
EAVES HEIGHT 00 FT-00 IN. WIDTH 00 FT-00 IN.
LENGTH OUTSIDE 00 FT-00 IN. INSIDE 00 FT-00 IN.
K-2 TRIPLE VALVE COUPLER SHANK 5"X7" COUPLER ATTACHMENT NO. 0. BRAKE BEAMS STEEL WHEELS
CLASS OF CAR BUILT-MONTH-YEAR
CENTER OF COUPLER
THESE LETTERS TO BE EITHER 2 OR 3-INCH LETTERS SPACING TO BE 2".
2 OR 3-INCH LETTERS
2'-10" MAXIMUM 2'-4" NORMAL, AS SHOWN 1'-10" MINIMUM
LETTERING TO BE ON INSIDE OR OUTSIDE OF BOTH SIDE DOORS
INITIALS OF ROAD TO BE PLACED ON END DOOR
RR
HOUSE CAR.
NOTES
HOUSE CARS MORE THAN 12 FEET FROM TOP OF RAIL TO EAVES TO SHOW HEIGHT, AND WIDTH AT EAVES AS NEAR THE BOTTOM AS CONVENIENT.
FOR HOUSE AND GONDOLA CARS TRIPLE VALVE, SIZE OF COUPLER, STYLE OF COUPLER ATTACHMENT, KIND OF BRAKE BEAMS AND KIND OF WHEELS TO BE SHOWN ON SIDE OF CAR AT END OR ON END OF CAR ABOVE COUPLER.
FOR FLAT CARS TRIPLE VALVE, SIZE OF COUPLER, STYLE OF COUPLER ATTACHMENT, KIND OF BRAKE BEAMS AND KIND OF WHEELS TO BE SHOWN ON THE SIDE OF CAR IN THE BEST AVAILABLE POSITION OFFERED BY THE CONSTRUCTION OF THE CAR.
TRUCK BOLSTERS TO SHOW SIZE OF JOURNAL AND LETTERS "M.C.B." IF M.C.B. AXLES ARE USED OR DISTANCE C TO C OF JOURNAL IF AXLES ARE NOT M.C.B.
INITIALS OF ROAD ON ONE SIDE OF TRUCK BOLSTER OR TRUCK TRANSOM.
SUBSTITUTE "STATION SYMBOL" FOR "NEW" WHEN CAR IS RE-WEIGHED.
TRUST MARKS, PATENT MARKS AND OTHER PRIVATE MARKS SHOULD BE 1" LETTERS OR FIGURES.
FACING THE "B" END OF CAR THE LEFT-HAND SIDE DOOR AT SEAL PIN TO BE LETTERED "L"; THE DOOR ON THE OPPOSITE SIDE TO THE RIGHT FACING THE "B" END TO BE LETTERED "R" AT SEAL PIN.
GONDOLA CAR.
FLAT CAR.
NO. 0. BRAKE BEAMS STEEL WHEELS
K-2 TRIPLE VALVE COUPLER SHANK 5"X7" COUPLER ATTACHMENT
LENGTH OUTSIDE 00 FT-00 IN.

Fig. 4.—M. C. B. Standard Marking of Freight Cars

for pedestal type of truck. The committee concurs to the extent of recommending the adoption of a Standard for limiting dimensions for cast-steel design of side frames with pedestal jaws and boxes for these frames as shown in Fig. 5.

DISCUSSION

T. H. Goodnow (chairman): The draftsman has made an error in Fig. 3. He shows the recess for hanging the brake head, but he does not show the center one. It was not the intention of the committee to have that removed.

In connection with the recommendation regarding the location of the angle cock on freight cars, I find that the Air Brake Committee have practically a smiilar recommendation.

Referring to the recommendation on "Marking on Freight Equipment Cars": The committee has had at least two conferences with the Conference Committee of the American Railway Association on the Standard Stencil for freight equipment. A letter was addressed to Mr. Taylor from the General Secretary of the American Railway Association, which reads as follows:

"The Committee on Relations between Railroads in its report which was presented to the American Railway Association on May 17, 1916, relative to standard lettering on freight cars, stated:

" 'There are two features in marking cars which it seems to the committee are especially important. First, the reporting marks, which usually include the initials and number of the cars, should be placed on freight cars between two horizontal bars, so located that employes will know exactly where to look for them, and, second, the seal pins upon cars should be so marked that accurate records of seals can be readily taken. The committee recommends the passage of a resolution requesting the Master Car Builders' Association to take immediate action upon these two points, even if they cannot agree on a general scheme for the uniform placing of all the marks necessary on freight equipment.'

"In connection with the foregoing statement, the following resolution was unanimously adopted by the American Railway Association:

" 'Resolved, That the Master Car Builders' Association be requested to consider again the subject of standard lettering on freight cars, and to take immediate action to provide first, that the reporting marks shall be placed on freight cars between two horizontal bars, not to exceed eight feet from the top of rail in location now specified for either name or initial, and, second, that seal pins upon cars be so marked that accurate records of seals can be readily taken.'

"Will you kindly advise what action is taken on this subject by the Master Car Builders' Association?"

In view of this, I would recommend, on behalf of the committee, that when this report goes to letter ballot it be divided, first, on the general marking as indicated in the sketch, and then a special letter ballot be taken on the horizontal bars above and below the numbers, and then another letter ballot on the item in regard to covering the seal pin marking.

At the last convention the matter of the standard steam hose coupling, as it related to the locking features, came up, and was referred back to this committee. The committee was unable to get together with steam hose coupler manufacturers in time to include any recommendations in this report. The committee took the matter up with the steam hose coupler manufacturers and held a meeting with them yesterday. At that meeting all of the companies, with the possible exception of one, and I think that can be handled so that it will be made satisfactory, practically agreed that, in so far as the locking feature was concerned, an agreement would be possible. I believe that the committee can take care of that by simply adding to the present contour lines certain other dimensions, establishing the length and height of the guard arm. It is the committee's recommendation that this be done, and the subject be presented to letter ballot, along with the others which we recommend.

F. F. Gaines (C. of Ga.): In view of the fact the Committee on Train Brakes and Train Air Signals has considered the matter of the location of angle cocks, I move that the Committee on Standards adopt that, rather than to present their own, because it goes into the subject deeper and is more far-reaching.

(The motion was duly carried.)

C. D. Young (Penna.): In regard to the suggested change in the contour of the bearing head for the brake head: As this is a matter that the Committee on Brake Shoe and Brake Beam Equipment has been working on for the past three years, I would suggest that this matter be referred to that committee. Regarding the change in the number of threads on union nuts and the standard markings for unions, made in accordance with Master Car Builders' Association: I should suggest that this matter be referred to the Special Joint Committee, which I understand is to be appointed to consider changes in the present plate.

Mr. Goodnow: In connection with Mr. Young's remarks about the unions, that will be agreeable to this committee.

A. R. Ayers, (N. Y. C.): There is a recommendation in regard to the radius at the inside end of journal bearings. This arrangement cuts away about 60 per cent of the end bearing. An arrangement, which has been handed to the secretary, provides for a clearance in the radius of the bearing to prevent it from riding up on the journal. Investigation has shown a very unsatisfactory condition of wedges and bearings, which is brought about by a slight wear on the top of the wedge, or a slight wear on the top of the box, which practically eliminates the benefit supposed to be obtained from the 78 in. radius on the wedge. It would seem to be worthy of much consideration whether the 80,000 lb. wedge of malleable iron ought not to be eliminated in favor of material which will wear longer and preserve its contour longer, because the best we can get does not provide any too great flexibility and equalization of bearing.

With respect to the springing of journal bearings, which you will notice is particularly complained about on the heavy bearing: We made some tests on a 50-ton car having one pair of wheels, with 5½ in. by 10 in. journals, another with 5⅜ in. by 10 in., another with 5¼ in. by 10 in. and another with 5⅛ in. by 10 in. journals. They were started out with new journal bearings; the 5⅛ in. by 10 in. journal in the first 100 miles of service got to a bearing of about 1 in. wide on the journal, and the pressure per square inch was something around 12 or 14,000 lb. On the 5½ in. by 10 in. journal, with the standard sized bearing, the width of bearing was about 1½ to 1¾ in. with a bearing pressure of around 600 lb., showing that when we take a warm journal on a freight car and apply a new bearing you put the journal up against a pretty serious proposition as to whether it will run cool.

The number of hot boxes in freight service causes an expense in setting out cars, changing bearings, delays to traffic, that if it was capitalized it would amount to many millions of dollars annually and certainly be worth some extra trouble and expense to cut down the number of hot boxes and to provide a better relation between the bearing and the journal.

Mr. Goodnow: I would like to say just one more word in connection with the stencilling of freight equipment: The committee of the American Railway Association which has been handling this matter with this committee, is very insistent that the transportation stencilling, and what might be termed the Mechanical Department stencilling, be separated. There seems to be a misapprehension that if this is adopted, it is going to make everybody change the stencilling on their

cars. I do not think that that condition would exist. It would simply give those of us who want to get a standard, something to go by. The committee sincerely hopes that the result of the letter ballot, if the convention finally approves of the report, will be favorable to making a new standard for stencilling freight equipment in this year, in place of nothing, which we have at the present time.

C. F. Giles, (L. & N.): We have been heartily in favor of this recommendation of the committee, and this is a splendid time for some of the members who oppose this proposition to air their views on it.

A. W. Gibbs, (Penn.): I would like to ask Mr. Goodnow what he would do if he had to have some more recording information. I am speaking particularly in regard to the tank cars. In addition to the recording information on the left hand corner we have the stencilling dates of tank tests, safety valve tests, and the kind of springs we use.

Mr. Goodnow: At the present time there has been no consideration given to the stencilling of tank cars with the special information that has to be on the tank car.

Mr. Gibbs: If the Tank Car Committee turns over to the Committee on Standards sheets showing recommended stencilling of tank cars, can the Committee on Standards prepare the drawing and submit it for letter ballot at the same time?

Mr. Goodnow: Yes, sir.

R. E. Smith, (A. C. L.): Going back to the matter of making provision for a brass for worn or turned down journals: As I understand Mr. Ayers, the principal point that impressed him was the bearing per square inch when the standard journal was used on the journal of a smaller size. If it is proposed to provide journal bearings of smaller diameter than the standard in order to take care of the smaller sized journals, I fear that a condition will be set up which will be more prolific of hot boxes than merely the high pressure per square inch, because I see the same difficulty in insuring the 5¼ in., we will say, being used on the five and one quarter inch journal. I see the same danger of the 5¼ in. or 5⅜ in. brass being used on the 5½ in. journal. I move, therefore, that the subject be referred to the Car Truck Committee.

Mr. Ayers: I second the motion. Would Mr. Smith be willing to include in that motion, the relation of the wedge to the top of the box?

Mr. Smith: Yes.

(The motion was put to a vote and carried.)

Mr. Young: I move that the item referring to the changes in the brake head and shoe be referred to the Brake Shoe and Brake Beam Committee, and the item referring to pipe unions be referred to the joint committee of the Master Mechanics' Association and the American Society of Mechanical Engineers, and further that the item on journal box gages be voted on as standard.

(The motion was put to vote and carried.)

The Secretary: The motion now is to approve the recommendation of the committee, with the suggestions offered on the floor.

(The motion was carried.)

Report on Train Brakes and Train Air Signals

At the annual convention of the Air Brake Association in May considerable discussion centered around the importance of proper maintenance of brake equipment and its help in increasing track capacity, particularly on mountain grades. The Committee on Train Brakes and Train Air Signals has done a great deal of work to facilitate the proper installation and maintenance of air brake equipment and the earnest atention of the members should be given to all the recommendations made. The matter of failure of cast iron wheels under refrigerator cars was brought up at the last convention and a report on this subject is embodied in the report of this committee. This is of great importance and special attention is called to the committee's recommendations. It should also be of special interest that this committee has made arrangements to co-operate with the Air Brake Association in its future work. Such co-operation should be of great benefit to both associations.

R. B. Kendig, Chairman

The committee consists of R. B. Kendig, chairman, mechanical engineer, New York Central; B. P. Flory, superintendent of motive power, New York, Ontario & Western; J. M. Henry, assistant superintendent, Pennsylvania Railroad; L. P. Streeter, air brake engineer, Illinois Central; R. A. Rasbridge, chief car inspector, Philadelphia & Reading; W. T. Hartman, air brake inspector, Rock Island Lines, and A. J. Cota, master mechanic, Chicago, Burlington & Quincy.

Passenger Car Hand Brakes.—It was hoped that by this year a definite design for a so-called efficient hand-brake gear for heavy passenger train cars might be evolved. Nothing new in this line with merits which might lead to its adoption has been produced. Aside from schemes for quickly taking up the chain slack and then increasing the leverage by winding the brake chain on the reduced circumference of a variable diameter winding barrel or worm, and other schemes of similar nature, or of operating the hand brake on but one truck at a time, by far the greatest improvement possible will be found in the direction of reducing the resistance due to movement of the hand-brake gear. By preventing the rubbing or pull rods and levers, by reducing the resistance of brake beam release springs and by keeping the amount of free slack in the brake chain always down to the minimum, the latter can be done only when the hand-brake design is such as to permit an automatic slack adjuster to operate in both the air and hand-brake rigging.

Location of Angle Cock on Freight Cars.—With a view to reducing brake-pipe leakage through the hose coupling on long freight trains where draft gear travel is extended to its maximum, and also with the view to reducing angle-cock breakages, it was suggested that a decided improvement would follow a revision of the M. C. B. standard location of angle cock. The location shown on Sheet 18 and the proposed new location are shown in the following table:

	M. C. B.	Proposed.
(*B*) Center of car to center of angle cock.....	13 in.	15 in.
(*C*) Coupler face back to center of angle cock...	13 in.	9 in.

The proposed new location is intended to meet the changed conditions and is predicated on coupler dimensions now M. C. B. Standard.

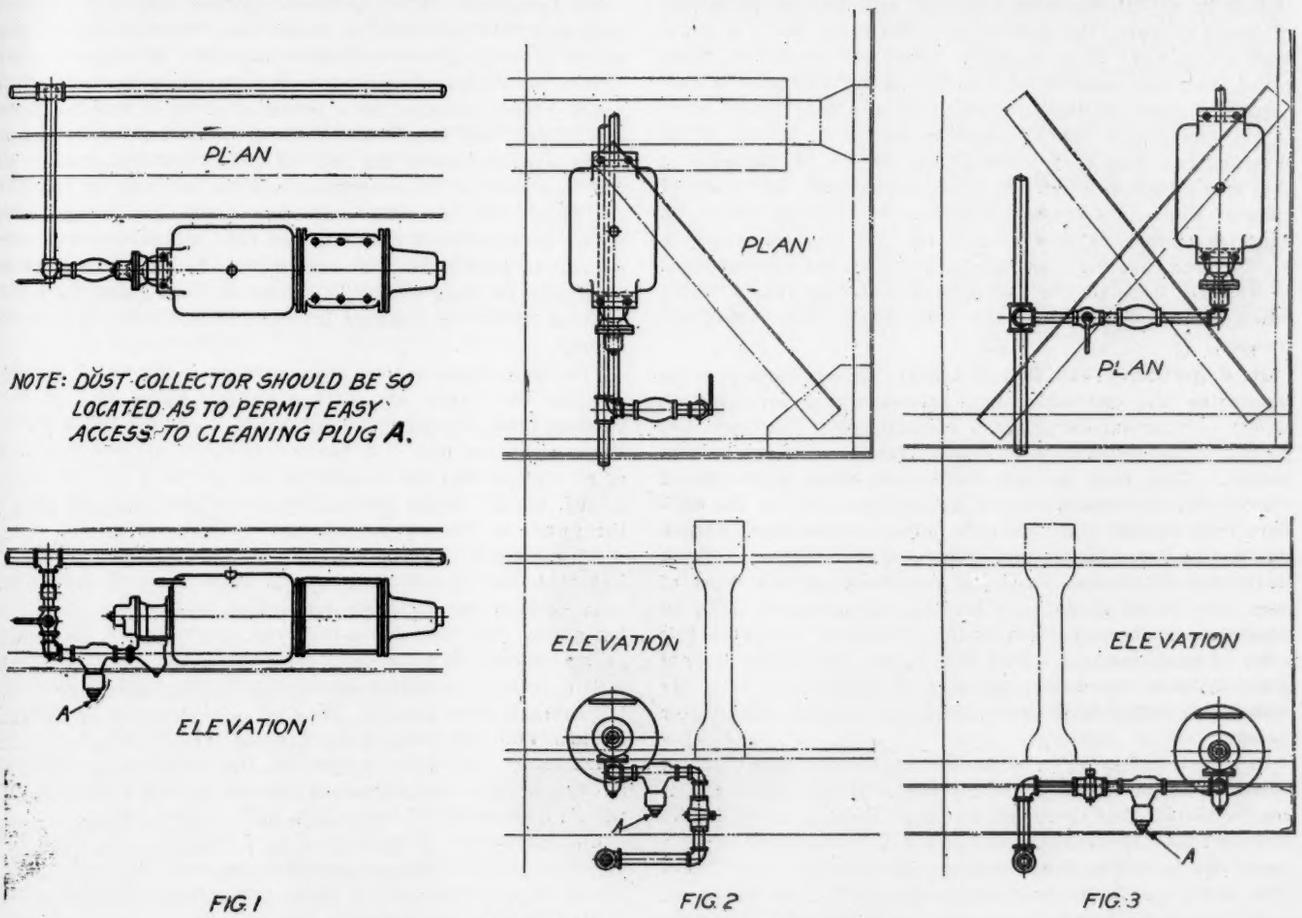
The dimension *B* must bear a fixed relation to dimension *C* and when through reasons of peculiar car construction dimension *B* is increased or decreased, dimension *C* should be ascertained from the following formula. Where *B* is the distance from longitudinal center line of car to center line of angle cock

and *C* is the distance from pulling face of coupler to center of angle-cock valve measured on a line parallel with center line of car

$$C = 39 \text{ in.} - 2B.$$

Inquiry concerning the feasibility of making the suggested change in location of angle cock shows that approximately the proposed location has been in general use on a number of railroads for some time past.

Train Air Signal Pipe Elbow for Hose Connection on Passenger Cars.—The elbow for air signal hose should follow the same inclination as that of the brake pipe angle cock, and the committee would recommend that the elbows located at the ends of train air signal pipe be installed so as to stand at an angle of 30 deg. from the vertical pointing toward the center of car, and M. C. B. Sheet Q1 should be revised accordingly.



Proper Installation of Centrifugal Dust Collector

Proper Installation of Centrifugal Dust Collector.—To indicate the method of installation of this piece of apparatus which should be followed on the various types of cars, the following Figs. 1, 2 and 3, are shown. From these diagrams it will be seen that the collector must hang in a vertical position; be placed in the branch pipe between the cut-out cock and triple valve, and the drain plug must be accessible for removal.

Failure of Cast-iron Wheels Under Refrigerator Cars.—This subject was referred to this committee by the Wheel Committee. The refrigerator car, as far as the ratio of loaded to light weight is concerned, is in a class by itself and should be treated as such. The fact that its comparatively low loaded weight brings it within the limits of a 60,000-lb. capacity car with an axle load of 22,000 lb., led to the use of the lightest pattern of cast-iron wheel weighing 625 lb. Coal cars of 110,000 lb. capacity average less light weight than the refrigerator car, but on account of the total load imposed require an axle to carry 38,000 lb. and a wheel weighing 725 lb., or 100 lb. greater than the weight of the wheel used on the refrigerator car. This wheel is thicker through the rim than the wheel of the refrigerator car with a corresponding increased capacity to dissipate heat generated by the brake shoe.

As a matter of fact, refrigerator cars require a fast freight movement and are run in trains made up mostly of box cars and cars whose loaded and light weights agree fairly well with those of the refrigerator cars, so that the latter are seldom, if ever, required to do more than their legitimate share of the brake work, and it is fair to say that excessive wheel failures under refrigerator cars should be traced to some other cause than the brakes; for instance, outside of the feature of brake efficiency, which is all-important, the refrigerator car makes considerably more daily mileage than other freight cars. The life of the wheels, measured in time, therefore, should not be expected to be as long as that of other cars making less daily mileage.

It is the recommendation of the committee that refrigerator cars be required to conform strictly to the M. C. B. requirements covering size and type of brake equipment to apply and the percent braking ratio to employ.

DISCUSSION

B. P. Flory (chairman): Since this report was printed, a member suggested that Rule 12 (a) in the Code of Rules governing the condition of and repairs to passenger equipment cars in interchange, be changed to read as follows:

"Rule 12. (a) Brakes must be in perfect working order. Brake cylinders and slack adjusters must have been cleaned and oiled within twelve months. Triple valves, control valves and high speed valves must have been cleaned, oiled and tested within six months, and date of last cleaning and oiling stenciled on brake cylinders and triple or control valve with white paint. Dirt collectors and strainers must be

cleaned every six months at time of cleaning triple valves or control valves."

The committee approves of this, but would suggest that this matter be taken up when the subject of changes in the rules of interchange is considered.

C. F. Loughlin (Armour Car Lines): In connection with the committee's report, where it states that: "The refrigerator car, so far as the ratio of loaded to light weight is concerned, is in a class by itself, and should be treated as such." The private car lines agree with that, and it was the hope that they would be treated in that way, and that some consideration would be given which would relieve this excessive brake application. The refrigerator car owners feel that they are required to conform with the Master Car Builders' requirements both as regards the leverage and the kind of brake that is used. Having done that, and still having the excess of brake failures, the owners of these cars are in a quandary as to what to do further. They are asking for some relief from the Association. As far as our company is concerned, if after thorough investigation the conclusions point to the fact that a heavier wheel should be used, and if the leverage has been duly investigated, we will be agreable to that as a means of relief, but in connection with that it would require some protection, so that a car having 60,000 lb. capacity should be protected when that heavier wheel is applied, and that condition does not exist at the present time. It was the hope of the car owners that this report would reach some definite conclusion that would assist these car owners.

M. F. Covert, (Swift Refrig. Lines): This subject was up before the 1915 convention with reference to heavier wheels under refrigerator cars, and a circular letter was sent out by the Wheel Committee to gather data in reference to that matter. That data showed there were more brake-burned wheels and flat wheels on refrigerator cars than on the ordinary railroad cars. We are now put to considerable expense due to the large number of brake burned wheels. I think if the braking power could be decreased on this class of cars you would notice a wonderful improvement, both in regard to expense, and also in the number of delays on this class of equipment. I would like to see something definite done by this committee, possibly in connection with the Wheel Committee, if necessary, in order to bring about better results.

In regard to heavier wheels, our people have no particular objection to putting in a heavier wheel, if necessary, and it can be shown that there can be some decrease made in the large number of brake-burned and flat wheels and avoid a lot of delays, but so far as I know, nothing has been shown that the use of a 725 lb. wheel in place of a 625 lb. wheel, would eliminate the trouble which we are having today in the directions outlined.

W. C. A. Henry, (Penna.): The Wheel Committee last year in its report called attention to the rather high percentage of wheel failures in refrigerator cars. It would seem there were two questions involved, the braking power and the weight of wheel, and that this unfavorable condition might be met, either by using a heavier wheel, or changing the braking power. We have had a joint meeting with the committee on Train Brake and Train Air Signals and have agreed that the proper thing to do is not to reduce the braking pressure but to require a heavier wheel. The large wheels apparently are better able to dissipate the heat caused in braking. The broken plates and cracked plates are confined almost entirely to the lighter wheels. With regard to the weight of wheels in refrigerator cars: The replies to our circulars last year indicated that the majority of wheels were lighter than called for in the Master Car Builders' Specifications. The maximum gross load to be carried by a 625 lb. wheel is 95,000 lb. The majority of broken plates reported to us were under cars weighing over 105,000 lb.

Prof. L. E. Endsley, (Univ. of Pitts.): I carried on some experiments two years ago on different weights of cast iron wheels, and I reported the results of those investigations at the February meeting of the Western Railway Club. If you put too heavy a brake shoe pressure on the light wheel, because of its thin web and because of less metal to absorb the heat in a given application, and because of less radiating surface also, you will have a greater tendency to crack that plate. There is no doubt in my mind but what a solution of the problem would be in the direction of an increase in the weight of the wheel. The rim of the wheel gets as much as 200 deg. hotter than the plate of the wheel, and the heat coming out by expansion stretches the plate and introduces some rather high stresses on wheels when the braking power is heavy.

Mr. Loughlin: What Professor Endsley has said with regard to a heavier wheel is undoubtedly right in theory, but in our practice it does not work out well. We experimented with a 740 lb. wheel under the cars. Some recent statistics, which I have gathered for a period of 32 to 36 months' service, showed that the defective wheels removed on account of brake applications in the case of heavier wheels amount to 22.7 per cent of the removals, and in the case of the 625 lb. wheel, the removals amounted to 27 per cent, which shows a variation of only five per cent, which would not be enough to justify the assumption that the heavier wheel is a remedy for this trouble. I think in connection with the heavier wheel the braking leverage should also be investigated.

The association should also consider a means of protection for the owner who puts a heavier wheel on. At the present time the rules call for a 625 lb. wheel for a 95,000 lb. capacity car and if a heavier wheel is applied it is not at all certain that the heavier weight of wheel will be maintained, except in the case where the wheels are put on by the owner of the car.

Mr. Covert: I agree with part of what Professor Endsley has said, but in reference to the power behind the brake shoe—that is one thing we are finding fault with. We have too much. We have more than our proportion in this class of equipment. We are furnishing about 40 per cent more power behind the brake shoes on our cars than is used on the average railroad cars. We only load our cars to approximately fifty per cent of their capacity. Would it not be much more consistent to consider the reduction in braking power and save that enormous expense of changing so many wheels on account of brake-burn and cracked plates.

J. J. Hennessey (C. M. & St. P.): I question very much the statement whether the refrigerator car—and the road I happen to be with runs a great many refrigerator cars—is loaded lighter than the other freight cars are. If you take it in certain sections of the country, the average load in a house car does not exceed 15,000 pounds. If that is true, I think the refrigerator car, as an average, is loaded heavier than some of our other railway cars, especially in the West, where we handle light commodities.

E. W. Pratt (C. & N. W.): I am in accord with what Mr. Hennessey has just stated. We are consistent, in the case of our own refrigerator cars, in carrying out our rules and with our own locomotive tenders, where we brake them to 100 per cent. of the light weight.

E. T. Millar (B. & M.): On our road the average load of house cars is less than eighteen tons.

Mr. Loughlin: I would like to read a section from the Wheel Committee's report to the convention last year, which answers Mr. Hennessey in regard to the variation in braking power as compared with the light cars. It is as follows:

"According to the present M. C. B. practice, cars are braked to sixty per cent. of their light weight, based upon 50 lb. pressure. Result of this condition is that a refrigerator car of 60,000 lb. capacity, weighing 44,000 lb., equipped with

wheels of 625 lb. weight, will have a braking power, in many instances, equal to or greater than a car of 100,000 lb. capacity, weighing 40,000 lb. and equipped with 725 lb. wheels."

We would like some action that will not only relieve the situation but will put us on a common plane. We do not want you to just simply reduce the pressure for us. It affects other cars of light carrying capacity and heavy weight, such as automobile cars. What we would like to have is a more uniform brake leverage in your train, and I am satisfied that can be accomplished. I hope that further investigation will be made by the committee, and I move that the report of the committee be received and that further investigation be made on this subject by either the Committee on Train Brakes and Train Air Signals and the Committee on Car Wheels, jointly, or either one, as the association sees fit to decide.

C. E. Chambers, (C. of N. J.): I would be opposed to any reduction in the braking power used on our freight trains. I think the relief of our refrigerator friends would be found in the use of a heavier wheel.

G. W. Wildin, (N. Y. C.): If this matter is to be submitted to a Joint Committee, I think the association should go on record that it disapproved any reduction of braking power in any brakes. If we have a special case which the present wheel will not fit, in that case we should give our attention to the wheel, and not reduce the braking pressure.

C. D. Young, (Penna.): In my opinion, it does not seem necessary to refer this matter to a joint committee. I think this is the matter which, if the association goes on record that the present light weight braking of freight cars is correct—and I hope the association will go on record to that effect—is entirely a matter for the Wheel Committee to settle, and should be left in their hands. If the association tells them that the present percentage of braking power is correct, they should furnish us with proper specifications for wheels to go under the cars, but for their light weight and gross weight, instead of the present requirements, which are for gross weight only.

Mr. Wildin: I move an amendment that it is the sense of this convention that the present percentage of braking power as the association standard be maintained and the matter be referred to the Committee on Car Wheels to furnish a proper wheel for the equipment under consideration.

Mr. Pratt: I move that the motion be further amended that the matter be considered by a joint committee composed of the wheel committees of the Master Car Builders' Association and the Master Mechanics' Association on account of the tender load.

(Mr. Pratt's amendment was then put to vote and carried.)

The President: The motion now before the house is the motion made by Mr. Loughlin as amended by the motion made by Mr. Pratt and Mr. Wildin.

(The motion was put to vote and adopted.)

The recommendations of the committee concerning the train air signal pipe elbow for the hose connection on passenger cars and the proper installation of centrifugal dust collector were accepted to be referred to letter ballot.

Brake Shoe and Brake Beam Equipment

This committee is presided over by the dean of the Schools of Engineering at Purdue University, the M. C. B. testing laboratory being at that institution. The committee held several meetings during the year, most of which were in connection with the design of a standard No. 2 brake beam which has been worked out in conjunction with a committee of the American Railway Association. The proper hanging and support of brake beams has also been considered in collaboration with the Car Truck Committee and a type of hanger is recommended.

Charles H. Benjamin, dean of Schools of Engineering and director of the Engineering Laboratories at Purdue University, was born at Patten, Maine, 1856. After serving a machinist apprenticeship he took a course in mechanical engineering at the University of Maine. Later, after a year or two of practical work, he returned as an instructor in mechanical engineering, becoming professor in 1883. In 1887 he was made assistant manager of a large industrial organization. In 1889 he became professor of mechanical engineering at Case School of Applied Science. He was appointed to his present position in 1907. The other committee members are C. D. Young, engineer of tests, Pennsylvania Railroad; R. B. Kendig, general mechanical engineer, New York Central; C. B. Young, mechanical engineer, Chicago, Burlington & Quincy, and C. H. Bilty, mechanical engineer, Chicago, Mil. & St. Paul.

Prof. C. H. Benjamin, Chairman

THE most important subject considered by the committee was the design and specifications for a standard No. 2 brake beam. This was undertaken at the request of the American Railway Association through its Committee on Standard Freight Car Equipment, in accordance with the following resolution passed by that committee:

"That the subject of the design of a standard brake beam be taken up by the Subcommittee on Designs and Specifications in collaboration with the M. C. B. Committee on Brake Beams, and that this should include the suspension of the brake beam and the brake-beam hanger, with a view of eliminating all safety hangers and the trouble that has been experienced with brake-beam hangers."

G. L. Wall, chairman of the subcommittee on Designs and Specifications (American Railway Association), attended the October meeting of this committee and discussed the problem with the members. The preparation of the design was assigned to a subcommittee consisting of R. B. Kendig and C. D. Young. In collaboration with Mr. Wall, the subcommittee prepared the necessary drawings and specifications. These were presented at the January meeting of this committee and adopted. These in turn were transmitted through your executive committee to the committee of the American Railway Association for their approval.

In view of the fact that the manufacture of No. 2 beams is now largely standardized and that the beam just referred to will undoubtedly be adopted by the American Railway Association as a part of its standard freight-car equipment, the committee would recommend that the No. 2 brake beam, shown in Fig. 2, be adopted by this Association as Recommended Practice.

Standard Hangers.—In view of the generally expressed opinion that more failures of brake beams occur on account of improper hanging and support than from any other cause, this committee has been asked to coöperate with the Car Truck Committee of the Association in preparing suitable designs and specifications for hangers. After discussion by the committee, this subject was referred to the same subcommittee as

noted above. The report of the subcommittee was adopted and forwarded to J. T. Wallis, chairman of the Car Truck Committee. The report reads as follows:

"1.—That the question of the M. C. B. Brake Beam Committee governing a design of hanger for submission to the Truck Side Committee is incorporated on Sheet "B," sent you accompanying my letter to Mr. Kendig of January 12, 1916. This design of hanger and pin takes care of properly locating the shoe as now standard with the M. C. B. Association, the use of proper diameter of material as now standard with the M. C. B. Association, and its proper length, using the upper hanger location as prescribed as Recommended Practice by the Truck Side Committee."

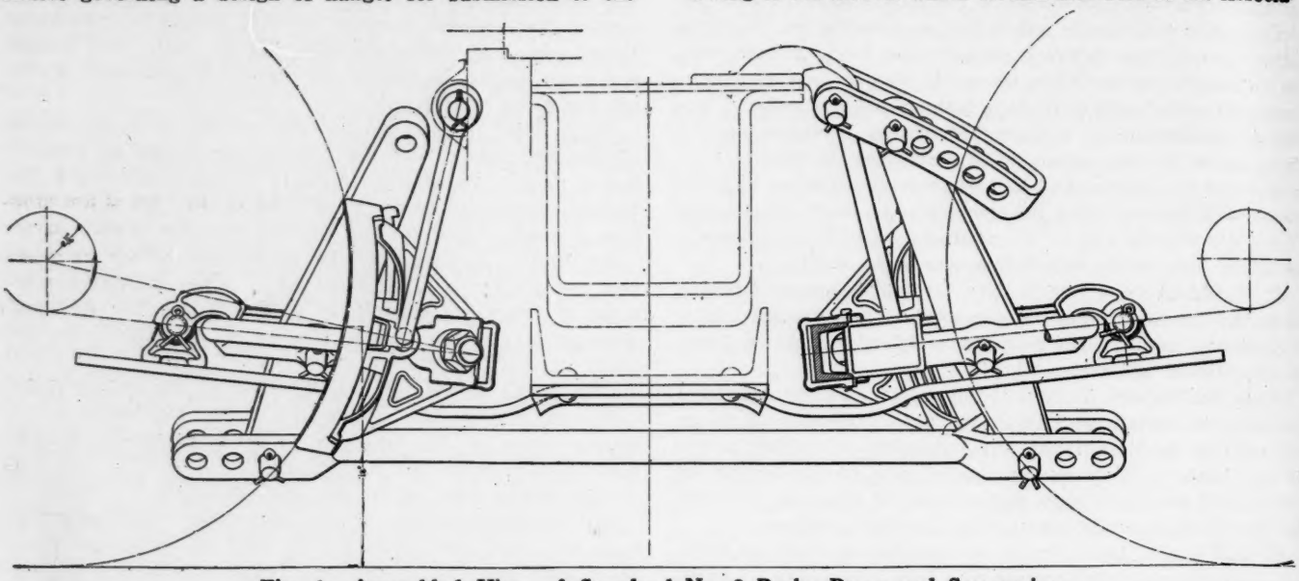


Fig. 1.—Assembled View of Standard No. 2 Brake Beam and Suspension

This design (Fig. 3) was approved by the Car Truck Committee and is accordingly recommended to this Association for adoption.

Tests of Brake Beams.—This committee recommends that the present standard specifications and tests for brake beams be written in accordance with the adopted form of the M. C. B. Association without any change in substance, but merely change in form as prescribed by the adopted Standards of the Association.

Owing to the trouble which certain members of the Association have had regarding tests on No. 2 M. C. B. brake beams, particularly with nuts breaking off the tension member at a point where the tension member is threaded for the nut, this committee would recommend that no brake beam is considered as a No. 2 M. C. B. brake beam that does not have a tension member the nominal diameter of which is 1¼ in.

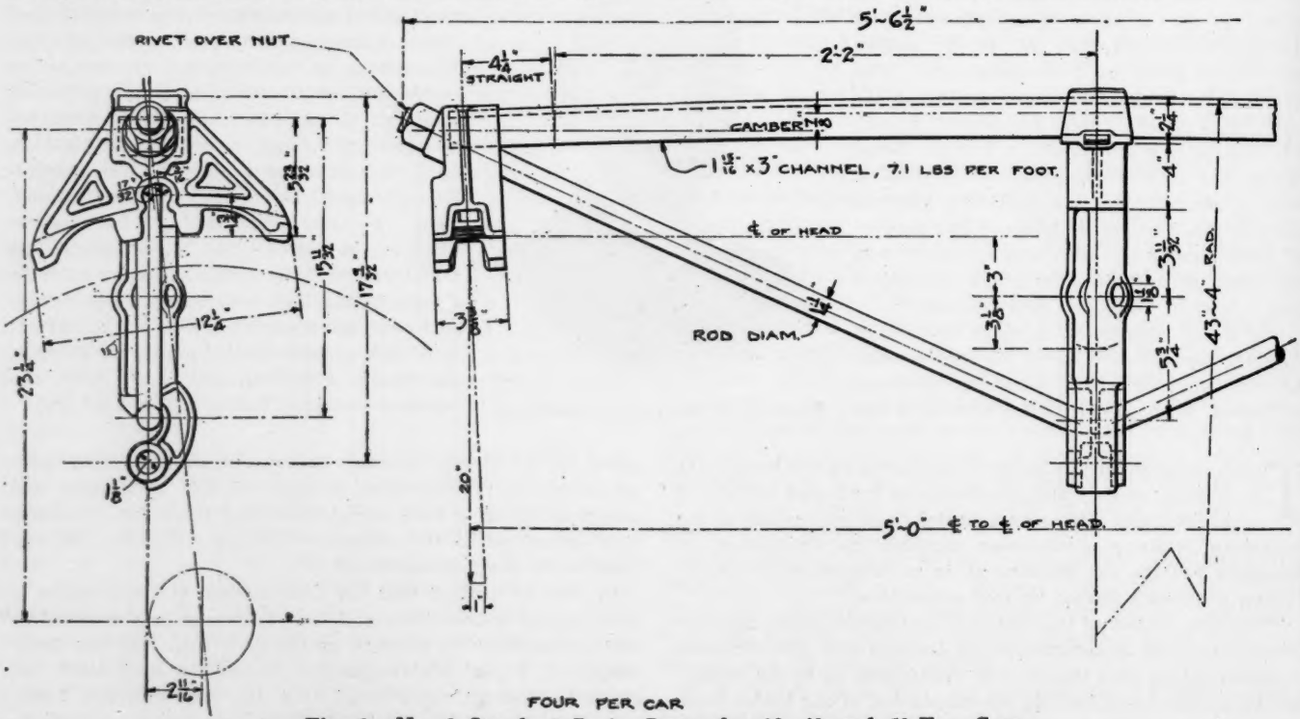


Fig. 2.—No. 2 Standard Brake Beam for 30, 40 and 50-Ton Cars

The committee recommends that a paragraph be added to the present specifications for brake beams, stating that the tension members for brake beams shall be made in accordance with M. C. B. mild-steel specifications and that the malleable-iron parts be made in accordance with the M. C. B. specification requirements for malleable iron.

Purdue University has undertaken to make comprehensive

physical tests of all No. 2 brake beams in common use for the information of the Association, and members have been asked to contribute beams for this purpose.

DISCUSSION

Prof. Benjamin, (chairman): The committee thinks that this is a particularly opportune time to adopt as recommended practice, the standard No. 2 beam on account of the stand taken by the American Railway Association. In connection

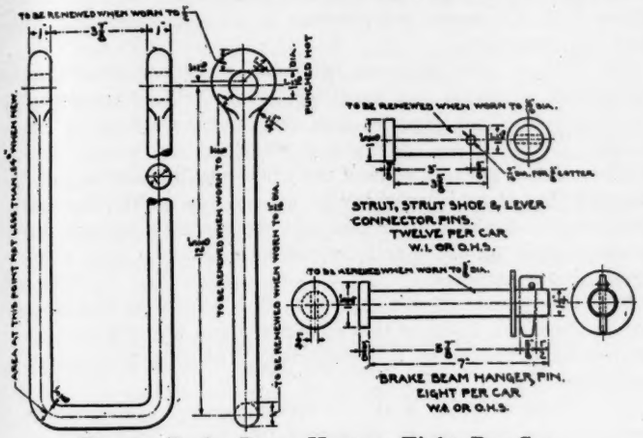


Fig. 3.—Brake Beam Hanger, Eight Per Car, W. I. or O. H. S.

with the item on standard hangers: Since this report was printed the Car Truck Committee has received certain communications from members of the association, and as the result of these communications the committee will recommend that this question be submitted to these two committees for further consideration. If that is the case, this committee concurs in that recommendation.

F. W. Brazier, (N. Y. C.): Every brake beam, whether on passenger or freight train, should have some suitable strong support, because the hangers give out. The committee shows a design which I do not think is very good—I do not think it is strong enough. We put ours inside of our journals and we use a considerable quantity of scrap iron for that purpose.

Professor Benjamin: As already stated the hanger question is still in abeyance. If a hanger does break, the committee believes the three-point suspension is the best safeguard as it fulfills two purposes—it not only acts as a safeguard in case of failure of one of the hangers, but also keeps the brake beam and brake heads and shoes in proper position during the operation of the car. The committee firmly believes that is the best solution of the difficulty and feels that if it is not strong enough it is very easy to make it stronger.

J. J. Hennessey, (C. M. & St. P.): I think the first thing the Master Car Builders' Association should do is to adopt a brake hanger of sufficient strength; something that will not fail, and then we can do away with any of these additional contrivances entirely.

C. D. Young, (Penna.): In line with what Mr. Hennessey has said, the committee working on this subject this year felt that if a great many of the present designs of brake rigging were maintained in anything like suitable condition the dropping of brake beams would be entirely eliminated. With that in mind, the committee recommended to the Standard Box Car Committee of the American Railway Association a pin and hanger for the brake beam tolerances in wear shown in Fig. 3. An investigation almost in any yard in this country will develop that the wear on the pins and the wear of the holes in the hangers is almost entirely disregarded unless the car is shopped. If you maintain the parts as originally designed, within limits of wear, I think that a great deal of the trouble with brake beams going down will be eliminated.

I would like to speak for a moment on the third point suspension as suggested by the Committee of the American Railway Association. That is a combined safety hanger and suspension for the shoe. Investigations upon a number of roads have shown that the release conditions of brake rigging on freight cars is in very bad shape, resulting in high hauling resistance, due to the shoes not being properly hung away from the wheel when the brake is released. By the third point suspension shown here when the brake comes to the release position, the shoe is carried back parallel and away from the wheel, so that the top of the shoe is not dragging on the wheel. Another feature of the device is the safety feature, which does not come into action until the hanger breaks or some part breaks. This device does not have any wear on it and is ready to take the beam and support it in case of any breakage. As Mr. Hennessey brought out, if we will maintain the parts of the brake beam hangers somewhere near the original dimensions when they were put on the cars, we will have less use for safety hangers.

G. W. Wildin, (N. Y. C.): It is all right to talk about the third point suspension. Is this the only device which the committee thinks is practicable for the third point suspension? This is a patented device, and this confines the association to a single manufacture of brake beam. I do not think that the association desires to go into any such deal as that.

C. D. Young, (Penna.): This design was submitted to the American Railway Association, Standard Box Car Committee, and it is recommended to this association by the Committee on Brake Shoe and Brake Beam Equipment, the idea being that the American Railway Association would take care of the patent features of the device. The Master Car Builders' Association, under its by-laws, cannot have as its standard a patented device, and therefore it would not be possible for us to have this as a standard.

R. E. Smith, (A. C. L.): Is the illustration (Fig. 1) presented as a typical arrangement to be followed by designers? If so, I would like to ask if the arrangement of the dead lever guide is the best that can be worked out. It does not appear to me to be designed to resist the stresses which will arise. I would also criticize the use of the round cotter key in any combination subjected to vibration. My own judgment and experience indicates the best device is a flat split key of more substantial proportions than the ordinary round cotter key. I would suggest also that the compression rod be made with upset ends rather than carrying the full 1¼ in. diameter through, and really get only the strength at the root of the threads.

It seems to me also that in Fig. 3 the allowance of wear in the hanger pin is too great. There is an allowance of weight from 1¼ in. diameter to ⅝ in. diameter, and it will wear in elliptical shape, and supplementing what Mr. Young has said, it seems to me the tolerance of wear is too great and it should be in narrower limits.

Mr. Brazier: I think Mr. Hennessey misunderstood me. I am not so anxious to depend on the safety strap. I said if the hanger should give out that strap would catch the hanger. We find ⅞ in. hangers worn down to ⅝ in., and there is no inspector who can see this unless they lift up the ends and examine them closely. I only want to urge two points, one is to have a strong hanger, properly built, and a strong safety device under the brake beam, to hold it up in case the bolts give out and the hanger breaks.

P. W. Helwig, (C. & A.): We should have some good safety strap in connection with the hanger. I think some suitable strap should be adopted, and we should also employ the best hangers.

J. J. Tatum, (B. & O.): Last year I made a statement with

reference to the proper attaching of the brake beam to the brake. I think our work should be done with the brake hanger. If we put the money into a brake hanger, properly made and then see to it that the tolerance is maintained, we will get a safe suspended brake beam. We would give the car an inspection when it is on the shop track. I believe that we need a little more hanger protection than what we have in this code. We have not done anything to take care of the lower connecting rod. The lower connecting rod gets loose from the levers, due to the cotter pins being closed up, ice collecting between the trucks pushing out the brake beam pins, and that allows the connecting rod to go down into the cross-ties, tears the beams off, and occasionally derails the car.

We have been increasing the size of our brake hangers, I think, for five or six years, making a substantial design and we have secured very excellent results.

C. E. Chambers, (C. of N. J.): The emphasis which has been laid on the brake hanger is surely pertinent, but what we are particularly concerned with are the two million cars we have in service that are probably not equipped that way, to which we must give lots of consideration. We must not lose sight of the fact of the necessity for properly safeguarding these cars in some manner.

Mr. Young: Answering the points Mr. Smith raised about Fig. 1, the committee's work does not cover any of the levers, the bottom connections or the dead end connections. They are simply shown so as to illustrate the general arrangement.

H. H. Harvey, (C. B. & Q.): In Fig. 3 the committee shows a design of brake hanger pin that is simply held in place with a split key. I think it is a mistake to depend on a split key or cotter key in any place as important as the brake hanger. If there is any place where there should be a substantial fastening it is at the point where the brake hanger pin is used. I do not think we should depend on a cotter or split key at that point. There should be a nut locker or cotter, and the split key in addition.

Mr. Wildin: I think it is a very poor hanger and I do not believe it will come anywhere near suiting the conditions. This is simply a ½ in. by 3 in. strap of iron riveted to the cross channel in the center of the brake beam. There is nothing at the other end. If the hanger is broken and drops down I think this strap is a pretty flimsy affair as a matter of safety. It may be all right as a matter of three point suspension, but when it comes to securing a brake hanger as a safeguard, it is pretty nearly next to nothing.

Mr. Smith: The objection to the use of the nut mentioned by Mr. Harvey is the difficulty that the inspectors have in removing the nut and renewing the brake hangers. It seems to me that the proper arrangement is a substantial flat split key and not a nut.

Mr. Tatum: We tried out the scheme recommended here by placing a washer and split key on the brake hanger pin. We found from our experience in the churning around of the hanger the pin wore off the key, wore out the washer and finally we had nothing to hold the brake pin in position. We decided that it was necessary to have a pin or key to take care of that brake hanger pin, and we placed a nut on the brake hanger pin and a split key in with the nut. That overcame all our troubles.

Prof. Benjamin: The hanger which is shown in Fig. 3 is still in abeyance, because this committee and the Truck Committee have requested a re-submission of this for further investigations.

O. C. Cromwell, (B. & O.): I would ask the committee to consider the question of changing the brake beam hanger slightly by closing the top ends together and making the support in between the ears instead of on the outside of the boss. That prevents the stress coming against the cotter key. We found a decided remedy in placing the upper ends of the hanger in between the ears and that throws the stress against that part instead of the fastenings on the outside.

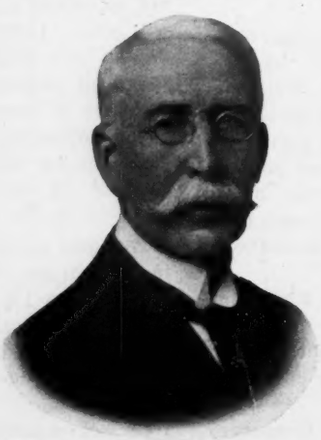
Prof. Benjamin: We recommend that item No. 2 in regard to a standard brake beam be submitted to letter ballot. We also recommend that the tests on brake beams, under No. 5, be adopted.

(The recommendations were adopted.)

Revision of the Rules of Interchange

The work of the Arbitration Committee is undoubtedly the most arduous of any of the standing committees of the association. The report presented by it does not begin to show the amount of work performed. During the past year this committee has met with the chief joint car inspectors and committees from the American Railway Association, the General Managers' Association and the Association of Transportation and Accounting Officers on matters in which the associations are mutually interested.

John J. Hennessey, master car builder of the Chicago, Milwaukee & St. Paul, was born in 1847 in Waukesha County, Wisconsin. He entered the service of the Chicago, Milwaukee & St. Paul at Prairie du Chien, Wis., in 1872 and was appointed foreman of the Milwaukee shops in 1879. From 1880 to 1887 he served as inspector of new car construction. He was then made general foreman of the car shops and in 1888 was appointed master car builder. He has been a member of the Arbitration Committee since August, 1902, and chairman of that committee since December, 1904. The other committee members are T. W. Demarest, superintendent motive power, Pennsylvania Lines; James Coleman, superintendent car department, Grand Trunk; F. W. Brazier, superintendent rolling stock, New York Central, and T. H. Goodnow, assistant superintendent car department, Chicago & North Western Railway.



J. J. Hennessey, Chairman

THE committee has had under consideration for several years a reclassification of the rules of interchange, but, owing to the time given by the committee to the study of the cases submitted for arbitration and interpretations asked for, the work has been postponed. The committee feels, however, that it can be done during the coming year.

[Following are the more important suggested changes in the rules.—EDITOR.]

Rule 2—Paragraph (a).—The committee recommends that the word "must" be changed to "should."

The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest that paragraph (e), be changed to read:

"When cars can not pass approved third rail clearances or overhead clearances for electrical conductors of the American Railway Association."

Also change section (f), paragraph 1, by changing the colon at the end of the first sentence to a comma, and add "by receiving line."

The committee approves of these suggestions.

The committee recommends that paragraph (7) be changed to read:

"Missing or defective side doors (except that an adjustment order may be obtained to apply proper door protection, as required by the Loading Rules), end doors, roof doors and hatch covers on all cars," and that the first section of paragraph 8 be eliminated.

Rule 3.—The Central Railway Club, Pittsburgh Railway Club and Niagara Frontier Car Men's Association suggest the following revision of paragraph (d): Change paragraph 2 to read: "Cars built prior to October 1, 1915, with axles other than M. C. B. Standard, will not be accepted in interchange after October 1, 1920."

The committee approves the extension of date, but recommends that the rule read as follows:

"Cars built prior to October 1, 1915, will not be accepted in interchange after October 1, 1920, unless equipped with M. C. B. Standard axles."

The committee recommends that paragraph 4, section (d) be changed to read: "Cars built after October 1, 1917, with journal bearings other than M. C. B. Standard, will not be accepted in interchange.

The committee recommends that paragraph (h) of this rule be transferred and made the last section of paragraph (c), and that the date effective be changed to October 1, 1918, it being felt that this extension of time is warranted.

Also, that the present paragraph (c) be changed to read:

"Cars built after October 1, 1914, and prior to January 1, 1917, will not be accepted in interchange unless equipped with either No. 1 or No. 2 M. C. B. Standard brake beam as indicated by the light weight of the car.

"Cars built after January 1, 1917, must be equipped with metal brake beams of not less than the capacity of the No. 2 Standard.

"All of the brake beams referred to shall have the letters 'M. C. B.' and proper number plainly stamped or cast on strut, as required by the specifications."

The committee recommends that section (e) be changed to read:

"Tank cars (empty or loaded) will not be accepted in interchange unless they comply with the M. C. B. Tank Car Specifications.

"NOTE.—It will be understood that all tank cars carrying safety valves must have the valves tested and stamped and the bodies tested and stenciled as required by the specifications, regardless of the commodity carried in the car."

The committee also approves the various suggestions to extend the time limit in sections (f), (g) and (k) to 1917.

Rule 4.—The committee recommends that the last sentence in the third paragraph be changed to read: "At the larger points where chief joint interchange inspectors are employed, the decision will be made by the chief joint interchange inspector."

The committee recommends the following addition:

"After January 1, 1917, no car will be received from owner unless properly equipped with United States Safety Appliances or United States Safety Appliances, standard.

"After April 1, 1917, no foreign car will be accepted in interchange unless properly equipped with United States Safety Appliances or United States Safety Appliances, standard."

Rule 8.—The Car Foremen's Association, of St. Louis, the Southern & Southwestern Railway Club and the Chief Interchange Car Inspectors' Association suggest adding the words "or typewritten."

The committee approves the suggestions.

Rule 9.—Under the head of "Wheels and Axles R. & R.," the Pittsburgh Railway Club suggests adding to the details now enclosed by the bracket: "M. C. B. or non-M. C. B. length of axle, diameter and length of journal, diameter of wheel fit, diameter of center of axle. (Only one dimension for length of journal, diameter of journal and diameter of wheel fit to be given, which shall be the dimension nearest the condemning limit.)"

The committee approves the suggestion.

The Central Railway Club and the Niagara Frontier Car men's Association recommend that after the words "Triple Valve R. & R.," eliminate the following note:

"(Need not be shown when cleaned only.)"

The committee approves the recommendation.

Page 20, add a new marginal reference, together with additional items, in a bracket, as follows:

General..... { Weights of forgings, castings, etc.
Feet of lumber.
Value of miscellaneous items.
Hours labor.

(The above information to be shown opposite each item.)

The committee approves the suggestion.

The German American Car Company proposes an addition as follows:

"When tank or safety valve of tank cars is tested in accordance with paragraphs 5 and 7 of the M. C. B. Specifications for Tank Cars, the certificate of test as required by the Interstate Commerce Commission regulations must accompany the billing repair card."

The committee approves the suggestion.

Rule 12.—The committee recommends that paragraph 3 be changed to read: "Joint evidence must be obtained within ninety days after first receipt of car home."

Rule 13.—The Central Railway Club, Pittsburgh Railway Club and Niagara Frontier Car Men's Association suggest adding sentence reading:

"It must be stated on back of joint evidence card where and when the wrong repairs were corrected."

NOTE.—Joint evidence card to be corrected accordingly by changing the wording of last line on illustration shown on page 225, as follows:

"Disposition of car. Repaired at.....Shop; date.....19..."

The committee approves the suggestion.

Rule 17.—The Pittsburgh Railway Club suggests change as follows:

"After October 1, 1916, M. C. B. Standard No. 2 brake beams may be used in repairs to all freight equipment cars equipped with M. C. B. No. 2, M. C. B. No. 1, or non-M. C. B. Standard beams. Any increased cost resulting from the application of No. 2 brake beams to be borne by the car owner when repairs are made on account of car owner's defects, M. C. B. Standard No. 3 brake beam must be replaced in kind."

The committee approves the suggestion.

The Pittsburgh Railway Club suggests changing last sentence of section (h) to read:

"Fir, oak or southern pine may be substituted for each other in the renewing or splicing of longitudinal sills and side plates. Oak and southern pine may be substituted for each other in renewing end plates. Fir and southern pine may be substituted for each other in renewing or splicing end plank and side plank."

The committee approves the suggestion.

The following recommendation was made under Rule 3, but the committee feels that it belongs under this Rule, and therefore has transferred it to Rule 17:

The Central Railway Club, Pittsburgh Railway Club and Niagara Frontier Car Men's Association suggest change to read: "M. C. B. Standard axle must be used in repairing or replacing an M. C. B. Standard axle. Between October 1, 1916, and October 1, 1920, in repairing foreign cars, non-M. C. B. Standard axles may be used to replace non-M. C. B. Standard axles in kind, also M. C. B. Standard axles should be

used to replace non-M. C. B. Standard axles when axle length conforms to M. C. B. Standard length."

The committee approves the suggestion except change the date to 1918 instead of 1920, and would recommend that the paragraph read as follows:

"M. C. B. Standard axles must be used in replacing M. C. B. Standard axles. Between October 1, 1916, and October 1, 1918, in repairing foreign cars, non-M. C. B. Standard axles may be used to replace non-M. C. B. Standard axles in kind; also M. C. B. axles may be used to replace non-M. C. B. Standard axles when axle length conforms to M. C. B. Standard length."

Rule 20.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest adding a new paragraph after the first paragraph, as follows:

"The use of liners between male and female portions of center plates is prohibited."

The committee approves the suggestion.

Rule 27.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest that this rule be eliminated.

The committee approves the suggestion.

Rule 36.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest that sections 1 to 5, inclusive, be revised to conform to resolution adopted by the American Railway Association, November 17, 1915.

The committee approves the suggestion.

Rule 41.—The committee recommends that this rule be changed to read as follows:

"Damaged longitudinal sills on cars having wooden underframes or composite wooden and metal underframes, if necessary to renew, splice or straighten more than three sills at same end of car will denote unfair usage, except as follows:

"(a) In the case of four longitudinal sills requiring renewal or splicing at same end of car, if the repairs or renewals to any or all of such sills are due to decay, elongated bolt holes or split on account of elongated bolt holes or broken on account of decay, joint inspection (using form shown on page ——) shall accompany the billing repair card, which together will be authority for bill against the owner, provided the total labor charge does not exceed ten per cent of the base price of car body as given in Rule 116, in which case the car must be handled under Rule 120.

"(b) Where five or more longitudinal sills require renewal or splicing at same end of car, and the joint inspection statement (made on blank shown on page ——) shows three or less broken, and the balance of the sills are shown to be owner's defects as outlined in paragraph (a), such joint inspection statement must be sent to owner, who shall promptly authorize repairs at his expense or the destruction of the car.

"(c) Draft members, wood or steel, extending from end sill to end sill and used to reinforce center sills, are not considered as longitudinal sills."

Rule 42.—The Chicago Car Foremen's Association, the Chief Interchange Car Inspectors' Association and the Pittsburgh Railway Club suggest eliminating this rule.

The committee approves the suggestion.

Rule 43.—The committee recommends that the heading over this rule be eliminated, and that this rule be changed to read:

"Any damage to all steel or steel underframe cars, unless such damage occurred in wreck, derailment, cornering or sideswiping, and except unconcealed fire damage."

Rule 58.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest changing this rule to read: "Air hose, when missing complete, missing cylinders, reservoirs, triple valves, angle cocks, cut-out cocks, dirt collectors, pressure-retaining valves, release valves, pipe or pipe fittings; also damage to any of these parts when such damage is due to wreck, derailment, cornering or sideswiping."

The committee approves the suggestion and recommends the addition of interior parts of triple valves.

Rule 59.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest a change, to read: "Renewal or repairs to any part of the air brakes, including leaky pipe or pipe fittings (except tightening unions), unless due to wreck, derailment, cornering or sideswiping, except as provided for in Rule 58."

The committee approves of the suggested change but recommends that it read as follows:

"Repairs or renewals to any part of the hand brake, air brake and pipe work unless due to wreck, derailment, cornering, sideswiping or unconcealed fire damage, except as provided for in Rules 33 and 58."

Rule 60.—The Pittsburgh Railway Club suggests changing the second paragraph to read: "Triple valves cleaned must be removed from car and tested in accordance with the M. C. B. code of tests for repaired triple valves."

The committee approves the suggestion.

Rule 65.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest a change to read as indicated and then drop interpretation on Rule 65 in Circular No. 6:

"Journal bearings (regardless of previous condition), journal-box bolts *and dust guards*, which require renewal when delivering company is responsible for change in wheels and axles."

The committee approves the suggestion.

Rule 70.—The committee recommends that the last paragraph be changed to read:

"Wrought steel wheels may be substituted for cast steel or steel tired wheels."

Rule 86.—The Central Railway Club and the Niagara Frontier Car Men's Association suggest changing this rule, as follows:

FOR CARS WITH NON-M. C. B. STANDARD AXLES (FOUR AXLES PER CAR)

Non-M. C. B. Standard axles less than the following prescribed limits must be removed from service:

Capacity.	Journal.	Wheel Seat.	Axle Center.
80,000 lb.	4½ in.	6¼ in.	5 5/16 in.
70,000 lb.	4 in.	5⅝ in.	4⅞ in.
60,000 lb.	3¾ in.	5 in.	4⅝ in.
50,000 lb.	3½ in.	4¾ in.	4⅛ in.
40,000 lb.	3¼ in.	4⅝ in.	3⅞ in.

FOR CARS WITH M. C. B. STANDARD AXLES (FOUR AXLES PER CAR)

The total weight of car and its lading must not exceed weight given in column *A*. Column *B* is the nominal capacity stenciled on all cars, except refrigerator cars. Axles must be removed from service when less than the prescribed limits in columns *C*, *D* and *E*.

Column A.	Column B. Nominal Capacity.	Column C. Journal.	Column D. Wheel Seat.	Column E. Axle Center.
210,000 lb.	140,000 lb.	5½ in.	7⅝ in.	6 7/16 in.
161,000 lb.	100,000 lb.	5 in.	6¾ in.	5⅞ in.
132,000 lb.	80,000 lb.	4½ in.	6¼ in.	5⅝ in.
95,000 lb.	60,000 lb.	3¾ in.	5½ in.	4¾ in.
66,000 lb.	40,000 lb.	3¼ in.	4⅞ in.	4¼ in.

Refrigerator cars, due to heavier weights of bodies, are to have capacity stenciled 10,000 lb. below that given in column *B*.

NOTE.—Axles heretofore known as 70,000-lb. and 50,000-lb. capacity axles are not M. C. B. Standard axles.

The Pittsburgh Railway Club suggests the above with the exception of reference to refrigerator cars.

The committee approves the substitution of the proposed tables in lieu of those already shown, with the following corrections:

1. Omit the words "except refrigerator cars" in the first

paragraph under title "For Cars with M. C. B. Standard Axles (Four Axles per Car)."

2. Omit altogether the sentence reading "Refrigerator cars, due to heavier weight of bodies, are to have capacity stenciled 10,000 lb. below that given in Column *B*."

3. Transfer note reading: "NOTE.—Axles heretofore known as 70,000-lb. and 50,000-lb. capacity axles are not M. C. B. Standard axles," to just preceding the heading reading "For Cars with M. C. B. Standard Axles (Four Axles per Car)."

NOTE.—It is called to the attention of the Association that there are certain types of cars, notably refrigerator cars, which, if loaded to marked capacity, have axles overloaded due to excess weight of car body. To insure the non-overloading of the axles, it has been proposed that the marked capacity of such cars be reduced so that the maximum weight of car and lading (marked capacity) will not exceed the axle capacity under car. The committee feels the matter is an important one and would propose for consideration the following note to be added to Rule 86:

"In no case should the axle under a car be of less capacity than required by the sum of the light weight and marked capacity of the car."

Rule 87.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest changing last two lines to read, "ciled showing capacity and light weight in pounds."

Rule 91.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest adding a new paragraph, as follows:

"(f) Billing repair cards returned for correction, or on account of exceptions, must not be defaced in any manner on the face of the card."

The committee approves the suggestion.

Rule 94.—The Central Railway Club, Pitsburgh Railway Club and the Niagara Frontier Car Men's Association suggest changing the second paragraph to read:

"If the owner elects to dismantle the body or trucks, or both, charge may be made for such material as would be required for the repairs covered by the defect card, but *such charge to be confined to the actual material stated on card.* No labor shall be charged in such case, except in so far as labor is already included in M. C. B. Prices for Material."

The committee approves the suggestion.

Rule 95.—The Pittsburgh Railway Club suggests that fifth paragraph be advanced to the fourth paragraph.

The committee approves of the reversal of paragraphs, but would suggest that the present fifth paragraph be changed to read:

"Couplers, including yokes, springs and followers when lost with the couplers; friction draft gear complete whether or not lost with the coupler."

Rule 90.—The committee recommends that the first sentence of this rule be changed to read:

"If car owner elects, on account of improper repairs, to remove M. C. B. Standard axles, he shall make charge for secondhand axles and allow credit for secondhand axles, if they are in good condition."

Also, eliminate balance of this paragraph.

Rule 102.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest an additional paragraph, as follows:

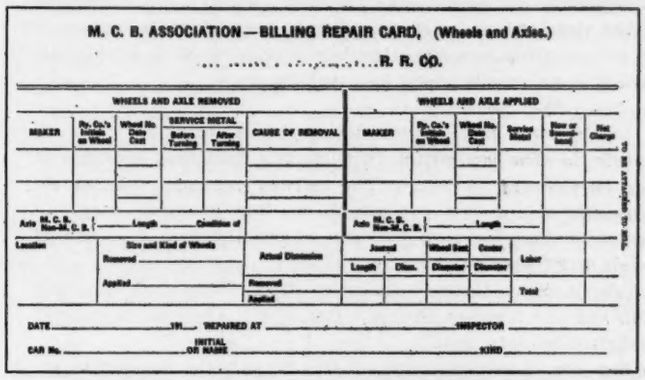
"In computing charges for bolts, nuts and forgings, if fractional weight of each entry on billing repair card is less than one-half pound, it must be dropped; if one-half pound or more, charge the entire pound."

The committee approves the suggestion.

Rule 107.—The Subcommittee on Conference of the Committee on Relation between Railroads recommended that the present charges for reweighing and restenciling cars, both stock and other cars, apply to non per diem cars only, and that a charge of $1.90 for per diem cars be incorporated in this rule, in order to make a flat rate for the two days per diem reclaim allowed by Per Diem Rule 20 and the labor allowable under this rule.

The committee proposes the adoption of the above recommendation on advice from the American Railway Association.

Rule 116.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest the following addition: Page 204, new paragraph: "On cars equipped with 8-in. air-brake equipment, 300 lb., and on cars equipped with 10-in. equipment, 400 lb., should be deducted from the weight of the body. This deduction, however, does not apply to cars settled for under Rule 120."


M. C. B. ASSOCIATION—BILLING REPAIR CARD, (Wheels and Axles.)

.....R. R. CO.

WHEELS AND AXLE REMOVED

MAKER | Ry. Co.'s Initials on Wheel | Wheel No. Date Cast | SERVICE METAL: Before Turning, After Turning | CAUSE OF REMOVAL

WHEELS AND AXLE APPLIED

MAKER | Ry. Co.'s Initials on Wheel | Wheel No. Date Cast | Service Metal | New or Second-hand | Net Charge

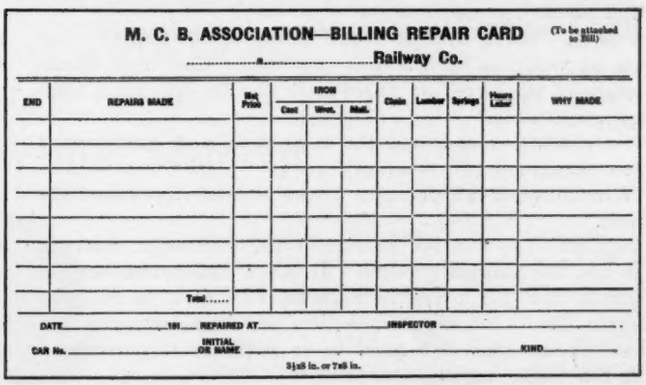
Axle M. C. B. Non-M. C. B. | Length | Condition of | Axle M. C. B. Non-M. C. B. | Length

Location | Size and Kind of Wheels: Removed, Applied | Actual Diameter: Removed, Applied | Journal: Length, Diam. | Wheel Seat: Diameter | Center: Diameter | Labor | Total

DATE ..... 191.... REPAIRED AT ..... INSPECTOR .....

CAR No. ..... INITIAL OR NAME ..... KIND .....

Fig. 1.—M. C. B. Billing Repair Card


M. C. B. ASSOCIATION—BILLING REPAIR CARD (To be attached to Bill)

.....Railway Co.

END | REPAIRS MADE | Net Price | IRON: Cast, Wrot., Mall. | Chain | Lumber | Springs | Hours Labor | WHY MADE

Total.....

DATE ..... 191.... REPAIRED AT ..... INSPECTOR .....

CAR No. ..... INITIAL OR NAME ..... KIND .....

3½x8 in. or 7x8 in.

Fig. 2.—M. C. B. Billing Repair Card (Wheels and Axles)

Rule 118.—The committee recommends that reference to feeding and watering attachments be eliminated from the second paragraph of this rule.

Rule 123.—The committee recommends that the fourth paragraph be changed to read: "The abstract should consist of not more than three typewritten pages, letter size, single space, the agreed statement of facts to be signed by both parties to the dispute."

Billing and Record Repair Cards.—Pages 228 and 229.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association make the following suggestions:

It is recommended that these forms be modified (as per Figs. 1 and 2) by adding an additional column for hours labor, in order that labor allowance can be shown for each operation, in accordance with recommendation under Rule No. 9. Also, the heading "Net Price" has been shown in the blank column next to space for repairs made, and a space provided at the bottom to show the totals of the various columns. This will make unnecessary the present space for showing total labor hours.

The committee approves the suggestion and in addition proposes the elimination of the column headed "cast steel"

inasmuch as there is no provision for showing cast steel on the bill form; this material being carried in the miscellaneous column, and the substitution for "hours labor" under the heading "cast steel." The note at edge of card "to be attached to bill" should be transferred to another location as shown. This will provide additional needed space for inspector in column headed "why made." The committee further proposes the use of a double size card 7 in. by 8 in. in addition to the standard size card, in order to provide additional space on one card for cars receiving heavy repairs; such double size card will materially assist in checking work.

PASSENGER CAR RULES

Rule 4.—The committee recommends that first sentence of rule be changed to read: "The railway company making repairs for defects not pro-ratable as line expenses may bill the car owner for these repairs unless there is evidence of unfair handling."

Rule 9.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest changing note to read:

"For loss of service metal on slid flat wheels, one-eighth in. will be allowed for flat spots two and one-half in. long or less; and one-sixteenth in. for each additional inch or fraction thereof.

"Any additional loss of service metal that is necessary to remove on account of worn flange or tread must be borne by car owner."

The committee approves the suggestion.

Rule 15.—H. A. Simms, Wells, Fargo & Co. Express, suggests an addition to this rule, reading: "Cast-iron wheels in place of steel-tired or rolled-steel wheels, delivering company responsible."

The committee approves the suggestion and recommends a new paragraph (d), reading:

"Wrought-steel wheels may be substituted for steel-tired wheels."

Rule 20.—The Central Railway Club, Pittsburgh Railway Club and the Niagara Frontier Car Men's Association suggest changing this rule to read: "Separate bills must be rendered monthly for: Line expense; repairs and cars destroyed, the prices for materials and labor to be governed in accordance with the accompanying schedule."

The committee approves the suggestion.

The report was signed by: Jos. W. Taylor, *Secretary.*

DISCUSSION

E. S. Way, (Penna.): Mr. Chairman, I would like to refer to the action of the committee on the recommendation made by the Central Railway Club and the Pittsburgh Railway Club, relative to Rule 17, suggesting a change of paragraph 3, section D. That action conflicts with their action on Rule 3, wherein they approved the recommendation that cars built prior to October 1, 1915, with axles other than M. C. B. standard, will not be accepted in interchange after October 1, 1920. The object of the other recommendation is to provide instructions for making repairs to those axles during the period in which they are to be in service, and if the date is changed to 1918, it will simply leave the rules without any definite instructions as to what axles may be used in repairs to the non-M. C. B. standard axles between 1918 and 1920. The date of 1920 should go along with the other rule as approved by the committee.

T. W. Demarest: The committee will take that under advisement, and if there is a conflict, will straighten it out.

E. F. Givin, (P. S. & N.): The recommendation of the committee on rule 3, paragraph D, is that it will be accepted in interchange until October 1, 1920. In 1920 the rule will cut out these cars. Some of them wil have gone out of existence in the meantime, but there will be railroads who have cars that have been put in first-class condition, which will have to go out of existence, too. What are we going to do about them? The axles will still be in first-class condition. We have at least 1,500 such cars of 70,000-lb. capacity that will be in very good condition at that time. These are coal cars, and are costing us at least between $400 or $500 each to put in good condition. There will be no way to put standard axles under these cars without putting new trucks under them. We spent that money before this question came up, and were under contract for under-frames, etc., before this question came up.

W. J. Bohan, (North Pacific): We have approximately 14,000 such cars that we are not spending any such money on, but that will not be out of service in 1920; in fact, a large majority of the cars will be in service still, and if this ruling is persisted in, it will mean a severe hardship on the Northern Pacific. I think a portion of this rule should be stricken out.

R. L. Kleine, (Penna.): We have had notice since 1896 that we should go to the M. C. B. standard axle. I think the Arbitration Committee is entirely right in legislating the odd axle out of service within a reasonable time. I feel that the committee has presented a report which we can, in general, all subscribe to. There may be little details with which we do not agree, but I think the report has been given very careful consideration. There is only one question I want to draw attention to; that is in rule 98, and the Pittsburgh Railway Club's recommendation in regard to the axle prices. All the railways represented in the Railway Club of Pittsburgh, have felt that we should have a price on an M. C. B. axle to the wear, along the same lines that the steel wheel is taken care of, and they formulated a plan showing how this can be done. That is for the M. C. B. standard axle. At present the rules provide for a new price for the M. C. B. standard axle, a second hand price and a scrap price. The difference is so great between the scrap, second hand and new prices for an axle, that in the bills against foreign roads, it runs up the cost of changing wheels considerably, especially if you use a new axle, and there are continued complaints. We felt this was a fair and equitable basis on which to fix prices on the axle, according to wear; that is on the M. C. B. standard axle. Now, the odd axle (or the non-M. C. B. standard axle) should be credited at the scrap value or at a value a good deal below the M. C. B. price, or below the recommended price for the M. C. B. axle. In other words, they are not of the same value. As the rule stands now you have the same value for the non-M. C. B. axle and one that is M. C. B. standard. You can take out an M. C. B. standard axle that has the wheel tit worn to the limit, and give only credit for scrap. You can take that same axle and put it into a car with a non-M. C. B. standard axle, and charge it at second hand value. I think this should be adjusted, but I do not think we have the time here. I would be willing to leave that to the Arbitration Committee to take into further consideration, and accept their final decision on the matter.

M. V. Covert, (Swift Refrigerator Lines): Mr. Chairman, referring to rule 86; the note under paragraph 3: I would like the Arbitration Committee to make it a little more clear about the specified time that we are going to have to restencil those cars, and also whether or not the capacity should be stenciled 40,000 lb. or 44,000 lb. and also where the car will be marked 40,000 lb. and you have a 4¼-in. by 8-in. journal, there should be some kind of protection there.

Mr. Demarest: Mr. Covert, does not the last paragraph just immediately over rule 87 cover your point?

Mr. Covert: I understand the point but this is merely a matter of where we are going to have to change the stencilling on cars, whether it is supposed to be within a specified time.

Mr. Demarest: If this is adopted there will naturally be a time given.

H. H. Harvey, (C., B. & Q.): With reference to rule 86, it seems necessary for the Arbitration Committee to give an

interpretation that will enable the car men to understand the figures that we have here. Rule 86 has had us pretty badly tangled up all this year, and I think that the arbitration committee has gotten something that will straighten us out, if we know what we want.

Mr. Demarest: We have anticipated that, and you have an interpretation in circular 25.

C. J. Miles: Referring to rule 118. It seems to me this is thing that interferes with the law. There is a tendency to an entirely new proposition before the association, and I fear that it is not really understood. I am sure Mr. Hennessey would probably take the position that his road has a number of cars with certain facilities that are not used, and that his road has probably been fined for the reason that they were compelled to unload their cattle within a certain number of hours, required by law. I think, however, that his condition does not prevail throughout the United States. I have in mind an instance which occurred recently in regard to the foot-and-mouth disease, in which it was practically impossible for the railroads, in the Eastern territory at least, to get cattle through the infected territory. The only way to overcome that was to provide facilities for feeding and watering the cattle. The Federal Government in their last regulations, dating back some eight or ten years, provide an exception in the case of cars equipped with feed racks and with water, so that it is still permissible to run cattle through in this class of cars. I cannot believe that it is the intention of this Association to take such action that in itself would be equal to confiscation of private property.

Mr. Chambers: Mr. Miles, that will be thoroughly considered by the Arbitration Committee and the necessary action taken.

T. H. Goodnow (C. & N. W.): I would like to ask Mr. Miles if the rest law was involved?

Mr. Miles: There is a clause which provides for rest, and that is pretty much a matter between the railroad and the shipper. Cattle, as a matter of fact, do rest. It very much hinges on the proposition of overloading; that is the only overload stock cars, but if there is any disposition to live within the law, the cattle can get rest.

Mr. Goodnow: It is your understanding of the law that you do not have to unload within the time specified for rest?

Mr. Miles: That is my understanding.

T. W. Demarest (Penna. Lines): I would call attention to the fact that we have a report coming on later in reference to the method of settling for reinforced cars, which, if adopted by the Association, will absolutely take care of the point.

[Action on rule 118 was deferred until after the action taken on the settlement of prices for wooden cars.]

J. W. Wilson: Referring to rule 2, page 6, I think it would be advisable to have the words "metal truck transom bars" mentioned there, owing to the fact that it is just as difficult a matter to obtain truck transoms as it is truck bolsters or truck sides or spring plank.

Mr. Chambers: That will be considered by the Arbitration Committee.

[The motion that the report of the Arbitration Committee be received, taking into consideration the suggestions made, was put to vote and carried.]

Prices for Labor and Material

This committee has been somewhat handicapped in analyzing the question of prices, by the unsettled condition of the material and labor market. Efforts are made to establish prices for labor, including the overhead charges, that will properly reimburse the roads making repairs to foreign cars. In formulating standard prices it is practically impossible to please every member of the association, due to the different conditions of labor in the various parts of the country. A subcommittee of this committee is now making analyses of the relative costs for the work performed, both under the day work and piece work systems.

P. F. Smith, Jr., the chairman of the committee, is superintendent motive power of the Central System of the Pennsylvania Lines. He entered railway service in 1887 as special apprentice on the Pennsylvania, and was appointed to the position he now holds January 1, 1912. The other committee members are G. E. Carson, division master car builder, New York Central; W. L. Kellogg, superintendent motive power, Missouri, Kansas & Texas; J. E. Mehan, assistant master car builder, Chicago, Milwaukee & St. Paul; Ira Everett, general car inspector, Lehigh Valley; Willard Kells, assistant general superintendent motive power, Atlantic Coast Line; O. J. Parks, German-American Car Lines; H. L. Osman, Morris & Co.; G. F. Laughlin, Armour & Co., and Thomas Beaghen, Jr., Union Tank Line.

P. F. Smith, Jr., Chairman

THE committee has taken up the work of analyzing the prices for labor and material as outlined by the Committee on Compensation for Freight Car Repairs in their report to the 1915 Convention and transmitted to the Price Committee, as instructed by the Association.

Owing to the present unsettled condition of the material market, it was impossible for the committee to make a recommendation for a general revision of the prices as they exist in the code. From a study given this matter, however, the committee is of the opinion that an advance should be made in certain prices for Rule 101 and Passenger Car Rule 22. It is the thought of the committee that in the course of another year, when conditions will, it is hoped, become normal, more definite and accurate recommendations can be made.

The prices for labor in our rules should be such as to reimburse the party doing the work for the cost to him, including the overhead. To correctly apply this basic principle, it is first necessary to determine the relative costs of doing a specified item of work in the various localities throughout the United States and Canada; and, second, by approved time studies to determine the correct cost for each and every price item embodied in the rules.

To answer the first problem and establish the relative costs for the work performed, both under the day-work and piecework systems, a sub-committee was appointed, and they are making an analysis of this detail. With these relative costs established as the first measure for a proper price system, each and every operation will be tested and timed out at convenient points in and around Chicago.

It has already been found by the committee that the labor allowance based on whole or fractions of an hour, such as one-quarter, one-half or three-quarters of an hour, results in

incorrect prices being established, and the committee requests authority to enter the prices in the rules for the correct amount and omit the hour or fraction thereof entry.

Labor.—The labor prices as shown in Rule 111 for freight cars shall be used for ordinary quick-action type triple valves, and for cylinders 14 in. or less in diameter on passenger cars.

	Charge.
Nuts only, 1¼ in. or under, four or less, renewed	$0.09
Nuts only, 1⅜ in. or over, one or two, renewed	.09
Bolts, tightening, each	.01
Lag screws, one, renewed	.09
Journal box lid, one, renewed	.18
Bolts, miscellaneous, 6 in. or less in length, each	.09
Bolts, miscellaneous, over 6 in. in length, each	.18
Bolts, key or brake pin, separately, one, renewed	.09

DISCUSSION

P. F. Smith, Jr. (Chairman): The committee wishes to add the following three paragraphs to its printed report:

"The convention of 1915 adopted the recommendation of the Committee on Compensation for Car Repairs, that an overhead charge of 44.4 per cent be added to what is considered shop repairs.

"That committee likewise recommended that fixed prices, including labor and material, be determined for such items as: Application of cotter keys, knuckle pins, knuckles, air hose, etc., such as are ordinarily done in classification yards. These fixed prices to apply whether the work is performed in classification yards, shops or on repair tracks.

"It will thus be seen that a fixed overhead charge was determined for strictly shop track work, but not for work done in classification yards. While the percentage for overhead would not be the same for shop tracks, and the classification yards, yet there is a proper percentage to be added to the direct labor in classification yards. It is the recommendation of this committee that the committee which determined the overhead for shop tracks be requested to determine what is proper to add in clsasification yards. This in order that the Price Committee's findings may be correct."

The minds of the Price Committee are open on the question of overhead, or what it should be, but in making out our actual time tests we should know what is proper to cover the average condition in the United States. I find in the printed circular there was one omission. It is in reference to scrap and anchor bolts on page 166, the thirteenth and fourteenth items of the book of rules. This has already been covered in our recommendation as shown in the printed portion for items 14 and 15 on page 140. It is practically the same item, but it appears elsewhere in the rule.

Another correction the committee would like to have made is that the prices that we recommended for knuckles and knuckle locks we feel should have some further consideration before we present them to the Association. Therefore the sixth and seventh items of the printed report we should like to have withdrawn.

R. E. Smith, (A. C. L.): I would like to suggest that the price for nuts be put on a piece basis instead of a pound basis. Under the recommendation of the Arbitration Committee, a half pound and less is eliminated, and above a half pound, one pound is charged for. That will result in eliminating altogether a great many single nut applications.

Mr. Mehan: I think that details could be taken care of in the final report.

Mr. Mehan: The Price Committee want some expression from this convention as to whether or not in completing their final report they will want to disregard the hours and stick entirely to the money. The committee felt in the past that perhaps there had been a lot of incorrect prices getting out. By timing certain labor operatoins, you get, for instance, 17 cents, and in order to get a fraction of an hour that will not run into too fine a fraction, you will revert back to the quarter or half an hour, and in that way you do not get the correct price.

Mr. Way: I am very much of the opinion that it is going to affect seriously our billing; that is, in checking bills rendered against us, and also in checking the charges as they come in from the shops, for the reason that it will be much more difficult for billing clerks to memorize dollars and cents items than it is at the present time to memorize the hourly allowance. I appreciate the fact that the dollars and cents will come more nearly to the actual cost.

Mr. Demarest: I call attention to another point in the Committee's report, and that is the reference to the overhead charges for yard repair work, if any. I move you that that work be added to the work of the Price Committee, because they are in a position now to get that information.

Mr. Gaines: I second the motion.

(The motion was put to vote and carried.)

Mr. Gaines: I move that the report be approved with the recommendations made from the floor taken into consideration.

(The motion was carried.)

Settlement Prices for Reinforced Wooden Cars

This committee, in 1914, had its scope enlarged to include an investigation of the subject of depreciation in relation to settlements for cars destroyed on foreign roads. In its first report last year it made a number of recommendations as to settlement prices, but found itself unable to come to any conclusions concerning depreciation. The report was thoroughly discussed during the convention, after which it was approved and the committee was continued to make a further investigation, particularly of the subject of depreciation. The report this year, while it is brief and concise, indicates a very considerable amount of study and work on the part of the committee. Naturally, as in the case of prices for labor and material, the problem is one which it will be impossible to solve to the complete satisfaction of all the railroads in various parts of the country.

J. McMullen, Chairman

John McMullen, mechanical superintendent of the Erie, is chairman. The other members are T. J. Burns, superintendent rolling stock, Michigan Central; J. E. Mehan, assistant master car builder, Chicago, Milwaukee & S. Paul; H. H. Harvey, general car inspector, Chicago, Burlington & Quincy; C. N. Swanson, superintendent car shops, Atchison, Topeka & Santa Fe; C. E. Fuller, superintendent motive power and machinery, Union Pacific, and T. W. Demarest, superintendent motive power, Pennsylvania Lines West of Pittsburgh.

THE committee recommends that Rules 115, 116 (except that part relating to trucks), 117 and 118 of the Code of 1915, be eliminated, and that new rules be substituted therefor, covering the settlement for cars destroyed on foreign lines.

The committee further recommends the following in con-

nection with determination of prices and depreciation:

(a) The original cost of a unit of equipment, inclusive of body, trucks and air brakes, shall be used as the basis for settlement, from which will be deducted depreciation figured from the date of the original cost to the date of destruction. If, however, betterments have been added during the life of the car, and added to the book cost, depreciation on such betterments shall be figured from the date when made and deducted from the cost of such betterments. The total of the depreciated first cost and of the depreciated betterment cost will be the amount to be paid in settlement for the destroyed car.

(b) A car will be considered as new when written out of service and rebuilt, when the cost of renewals (repairs, renewals or betterments made at the same time) constitutes the major portion of its value as renewed, and settlement will be made as in the case of a new car. In no case shall the charge for the rebuilt car exceed the cost at current market prices for labor and material of new equipment of similar type, equal capacity and equal expectation of life in service, less a suitable allowance on account of the secondhand parts remaining therein.

(c) In order to provide uniform rates of depreciation for the settlement of cars destroyed on foreign roads, your committee would recommend the following:

Wooden cars, all classes, except refrigerator cars	5 per cent.
All-steel cars, all classes, including steel tanks of tank cars	3 per cent.
Wooden cars, steel-framed or steel-underframed, or both	4 per cent.
Refrigerator cars, all wood	7 per cent.
Refrigerator cars, steel-framed or steel-underframed, or both	6 per cent.

The above rates are to be applied on the so-called straight depreciation basis. For example, the depreciation on a wooden car, ten years old, at the rate given above (5 per cent), which cost originally $1000, would be $500. These rates apply to body, trucks and air brakes; but depreciation shall in no case exceed 80 per cent of the value upon which it is based.

(d) In order to provide for settlements for trucks, when trucks only are destroyed, prices headed "Trucks," Rule 116, page 204, 1915 Code of Rules, and paragraphs of the rule following the table, should be retained. Depreciation to be figured at the rate established for the type of car the trucks were under when destroyed.

(e) Rules 112, 114 and 120 to be rewritten by the Arbitration Committee to conform to the recommendation in this report.

DISCUSSION

Mr. Way: I think that the plan as outlined by the Committee for the settlement for foreign cars is going to prove very much more equitable. There is one point, however, that I feel should be given serious consideration by this committee, and that is the return of trucks from destroyed cars. Very frequently, when cars are destroyed, the trucks are not seriously damaged, and it would be much more economical to the road destroying the car to return the trucks. I think that the rule should provide for the return of the truck at the option of the road destroying the car. We recently worked up some figures on the Pennsylvania to see what it would mean if we were obliged to settle on the depreciated value for trucks instead of returning them. For a period of six months we found that we would have lost approximately $6,300 had we been compelled to settle for the depreciated value of those trucks.

Geo. F. Loughlin: I would ask the committee in connection with the first sentence in paragraph (a) why they use the original cost of a car destroyed, since it is present or replacement value which the owner of the car must figure against. It has always been customary heretofore to use the present value and that is customary in connection with insurance settlements in the past. It seems to me we are going in the wrong direction to go back to the original cost now.

Mr. McMullen: We always figure on the original cost and the depreciation. We are going to figure on the original cost, subtracting the depreciation, which we have figured at five per cent. We have figured out the depreciation at five per cent. straight as is explained in the latter part of the report.

Mr. Loughlin: It is my understanding we have always figured on the replacement or present value of the same kind of car, and then added the depreciation. That is the way the rule reads.

Mr. McMullin: That is a refrigerator car, a special car.

Thomas Beaghen, (Union Tank Line): I ask the committee if the all-steel tank car is referred to in this paragraph (c) as being included in this depreciated feature?

Mr. McMullin: It is.

A motion was made and seconded that the committee be instructed to provide for the return of the trucks of destroyed cars at the option of the road destroying the cars.

G. W. Wildin, (N. Y., N. H. & H.): I want to oppose that motion. It has been our experience that the road owning the cars destroyed, in having the trucks returned to them, get an accumulation of material they do not know what to do with. The trucks are really of no use to the road they are returned to except to use as second-hand material than to the road which destroyed the car.

F. F. Gaines, (C. of Ga.): We have a policy which takes care of that situation. By supplying underframes and building new cars on these trucks, we utilize the trucks and the air brakes and various other features of the cars, especially on flat cars.

Mr. Wildin: That is all right provided you want to build the same capacity car, but a 60,000 lb. capacity truck is of but little value if you are discarding that class of equipment and want to build 80,000 lb. or 100,000 lb. capacity cars.

M. K. Barnum, (B. & O.): I ask the reason the committee had for recommending three per cent. as the rate of depreciation on all-steel cars. As far as all the information that I have been able to discover bearing on that point goes, that is not sufficient.

R. E. Smith: I cannot see why a railroad, which is penalized for having destroyed a car, should be still further penalized by being obliged to buy the second-hand portion of the car from the owner. It seems to me it is perfectly fair to return the trucks to the owner, as they have a scrap or second-hand value.

Charles Swanson, (A. T. & S. F.): We feel that, from the fact that so many of the truck parts are M. C. B. standards that it would not be economical to burden the transportation department by sending these trucks home, that there are very few parts of these trucks, whatever capacity car they may have been under, that cannot be used by the road destroying the car, and that is the position the committee takes, that it would not be economical in any case, speaking generally, to return these trucks or the air brakes.

Mr. Loughlin: I think Mr. Way figured his depreciation on the basis of the value of the trucks shown in the rules. If the rule is adopted, and the value of the truck becomes a unit part of the car, then the depreciated value of the trucks would be less on a new or rebuilt car.

J. E. Mehan, (C., M. & St. P.): There is another view pertaining to this matter of returning the trucks, and that is when a railway company destroys a car it is not any more unfair to return the truck, which may be in good condition, than it is unfair to return any metal bolster of the body to the owner, if you are going to unload the truck on the owner why stop at the truck, why not turn over the draft gear and couplers and body bolsters? You can return the trucks in cases where the freight does not take the value of the trucks. You can make a private agreement to re-

turn them, but it is unfair to unload an obsolete truck on him.

T. H. Goodnow, (C. & N. W.): It would seem from those who have spoken in this discussion that all of the cars being destroyed are the old obsolete cars. I do not think that is true. We unfortunately destroy many of the modern cars in wrecks. The argument that Mr. Swanson made for the Santa Fe does not hold good nowadays and I believe the situation has become more in favor of the return of trucks on account of the introduction and general use of a cast steel truck that is not common except with the car owner.

I heartily endorse Mr. Way's motion and believe that it should prevail. What few old obsolete cars are destroyed can be handled by mutual arrangement rather than to make a rule to cover them to the detriment of the modern truck. If there is anybody who has any use for the modern truck it is the car owner.

F. F. Gaines: If the worn-out truck has depreciated so far that the freight on it amounts to the value which is left in the truck, you will not send it to the owner. That is apt to be the case in 99 cases out of 100 with the 60,000 lb. car. I think it should be optional with the road destroying the car whether they should return the trucks or not.

E. W. Pratt, (C. & N. W.): I ask if several who have made remarks would not be satisfied with an amendment to this motion eliminating trucks of less capacity than 80,000 lb. There seems to be a general opinion that trucks of 50,000 lb. and 60,000 lb. capacity ought to be taken by individual and that we need not have a general rule covering them. I make that as a suggestion.

Mr. Way: I would not care to accept that amendment. One reason is that there are quite a large proportion of the 60,000-lb. capacity cars that have the cast steel truck sides and these truck sides are of no value to the road destroying the car in the majority of cases, whereas they will be of value to car owners.

Mr. Pratt amended the motion to read: either trucks with cast steel sides or having journals 5 in. by 9 in. or larger.

Mr. Gaines: Before you put the amendment, I want to emphasize once more that I think we should take all or none. The bolsters in the trucks are of no use to any road except the car owner, and the truck sides, in many cases cast steel, cannot be used except by the owner. I hope this amendment will be voted down and the original motion will prevail.

Mr. Pratt: I do not care which way this goes. I think we are all in the same boat today on the question of material. Road after road is turning down orders for new cars and equipment on account of the excessively high cost of material. We are trying to reclaim all of our old material and find a use for it. Are we justified then in paying high freight charges on scrap? If we can form a compromise here that will be an economical thing for the railways as a whole, it seems to me that is the thing to do, not to consider ourselves as individual railroads. On the railroad with which I am connected I do not believe we ever use a foreign truck under one of our cars and do not believe we would do it. Therefore, if that truck is of use to someone else I do not believe we have a right to tear it down and put it into the scrap pile.

T. H. Goodnow: The question of the economy of retaining the truck rests wholly with the road that destroys the car. They have a truck, and there are certain freight charges involved in returning it to the owner, and it is a question for them to decide whether it is worth while to return it. I think Mr. Pratt's idea is all right, so far as keeping old-style trucks, but the way the amendment is put simply confines it to the cast-steel truck side. He says 80,000-lb. capacity cars. There are other trucks, modern 80,000-lb. capacity arch bar trucks, which can be returned and used. I believe the amendment should be more definite as to what Mr. Pratt has in mind.

Mr. Chambers: He said under 80,000 lb. capacity.

Mr. Pratt: I will make the motion clear, as long as it is put as an amendment, that it be optional with the railroad on which the car is destroyed to return the trucks, in case the trucks have 5-in. by 9-in. journals, or larger, or have steel sides.

G. W. Wildin: I second that motion.

(The amendment was voted down.)

Thomas Beaghen, (Union Tank Line): I notice that the subject is reported on by the committee as the Settlement Prices for Reinforced Wooden Cars. Does paragraph (a) refer to the steel underframe car? The Union Tank Line Company has several hundred cars which require heavy repairs, and we consider it really from the point of view of betterments. Does paragraph (a) cover the steel underframe and the betterments to the amount of $400 being expended on a car, the original value of which was $1,600? Does that cover all-steel tank cars?

Mr. McMullen: Yes, it covers all cars—that was the intention of the committee. The committee was first appointed for the purpose of arriving at settlement prices for reinforced wooden cars, but later the matter of depreciation was turned over to them.

(The motion made by Mr. Way was then put to vote and was carried.)

Mr. Chambers: Mr. Barnum asked a question about the 3 per cent. depreciation. Can you answer that, Mr. McMullen?

Mr. McMullen: The committee figured as nearly as they could on the life of the car. Of course, the life of cars differ; but we arrived at it in that way on the life of the car.

Mr. Barnum: What did you find the life of the steel car to be?

Mr. McMullen: We figured on 12 years, at the end of which time we would have to rebuild it.

Mr. Barnum: If the life of the steel car is 12 years, the 3 per cent is manifestly too low for depreciation.

Mr. McMullen: We have to practically rebuild the car and put in new sheets at the end of that time. If the cost of those repairs exceeds the value of the car as it stands, that will be taken up as a new unit of equipment.

F. F. Gaines, (C. of Ga.): We are putting in floor sheets in steel hopper cars, and yet the cost of that work is not anywhere near the cost of a new car. It is simply a case of repairs, and I believe that you can take an all-steel that has a life of approximately 30 years.

D. R. MacBain, (N. Y. C.): I would like Mr. Thompson to tell us his experience with steel cars. We have some of the first steel cars that were ever put in use.

W. O. Thompson, (N. Y. C.): Our experience has been that in the case of hopper cars, in service from seven to eight years, part of the floor sheets are giving out, which makes the cost of repairs something like $250. In the case of other cars from 10 to 12 years old we find the hoppers and floor sheets and some of the sides give out or deteriorate so that they have to be renewed, the cost running to $600 or $700. We also have a few cars which are in the neighborhood of 15 years old, the first we had, and we rebuild them, the cost running to about $1,000.

Mr. Goodnow: Mr. McMullen says where the price of repairs exceeds the cost of a new car it is written off and taken as a new car. Does he actually find the accounting of cars being handled in that way or in anticipation of a change in accounting, so that when such repairs are made he will take up the car as a new car from that time on? That is the method of accounting used by almost every railroad in the country today. If the cost of the repairs exceeds the value of the car renewed it is taken up as new equipment.

Mr. Goodnow: Certainly that is not being done in this country generally.

R. L. Kleine, (Penna.): The recommendations under (b)

cover a major portion of its value. As I understand it, that is 51 per cent or above, and not the value of the new car.

Mr. Helwig: We have about 4,000 all-steel cars and about 1,000 that are 16 years old. Those we are cutting down now and spending not more than $100 to keep them in service the next two years. A year ago we cut down 475 cars, which were 16 years old also. We are spending on the drop bottom coal cars as high as $300 on cars that had been in service 14 years.

C. E. Fuller (U. P.): There have been several statements made here which I think are confusing. Mr. Goodnow spoke of the cost of a new car. As I understand it, in the case of a new car the price does not matter; it is the depreciated value. If the car is worth $200, $300 or $400 and you are spending more than that amount of money in repairs, you wipe the car out and take it as a new unit. You do not consider the value of the car as new.

Mr. Goodnow: I was not alluding to that aspect of the question, the financial part. It has been stated that about $250 was the highest general repairs given to a steel car for renewing the floor sheets and side sheets. Mr. Barnum then raised the question of the 3 per cent. depreciation. That figure will certainly not exceed the value of the car, so that it will be charged off and be taken as a new car. If the statement is made that you are putting the steel car with that expense on it back into the service, practically as good as it was, and the money value of the car would not exceed the value of the new car, then Mr. Barnum's contention about the 3 per cent. is well taken.

M. K. Barnum (B. & O.): We have spent up to $500 in repairs on cars due to ordinary wear. The cars we have been cutting down are less than 15 years old. We have cut down upwards of 2,000 of them in the last 15 years. That would indicate the average life of steel cars under these conditions is approximately 15 years. If that is so the rate of 3 per cent. depreciation is radically wrong.

Mr. Chambers: We have on our line 1,000 steel coal cars 16 years old, and we are spending $260 on these cars in renewing the bottom sheets, hoppers excepted, to put them in good condition. I do not think they would last as long on an all-bituminous coal road as on an anthracite road.

J. J. Hennessey (C. M. & St. P.): As I understand this report, it simply means if you take an all-steel car and depreciate it, for example, down to $500, and the car is then taken out of service and it has a book value of $500, and you put $501 in repairs on it, that would make the car stand you $1,001. That would be the book value of the car when it goes into service, regardless of what it cost when it was new. As to the depreciation, it seems that 3 per cent. is to low.

F. M. Graff, (Erie): Personally, I do not believe it is necessary to adopt this rule. That opinion is predicated on the proposition that there are but few cars, comparatively speaking, that are destroyed away from home, and an arbitrary rule works out just as satisfactorily as the complicated abstruse proposition that the committee has formulated here today.

D. F. Crawford, (Penna.): The ones that die at home do not concern us materially. It may be interesting to you to know that the Pennsylvania System owned about 130,000 all-steel cars. The oldest cars were built in 1898, about 2,000 having been put in service the latter part of that year. The latter part of 1915 the number of steel cars on our road reached 130,000 cars. During that entire period 97 cars had been destroyed out of that number and some of those were destroyed on our own lines. With the steel car, both the coal car and the other cars coming into general use, this death away from home becomes of less importance.

I would like to ask the committee why the same truck, under different cars, depreciates at different rates. The Pennsylvania System has some 300,000 trucks that are all alike, some under refrigerator cars, some under coal cars and some under box cars. According to this report some trucks will have a different life according to the different cars they are under. I think a truck made up of exactly the same parts should depreciate at exactly the same rate, irrespective of the service or class of car under which it is placed.

LAST EVENING'S INFORMAL DANCE

The M. C. B. informal dance on the Million Dollar Pier last night was largely attended. The reception feature was given up, and every one turned to the attractive dancing program of 12 numbers, with liberal encores. The new music played by the Richardson Orchestra, with its perfect time for dancing, was greatly enjoyed.

The committee in charge of the affair were: W. E. Krepps, chairman; C. W. Floyd, H. E. Passmore, J. R. Forney, L. B. Sherman, C. C. Farmer and A. G. Bancroft.

JOSEPH W. TAYLOR

President MacBain, in his presidential address yesterday morning, paid a well-earned tribute to Secretary Taylor in the following words:

"In closing, I wish to invite the attention of the Association to the long and faithful service of our secretary, Joseph W. Taylor, and commend him to you for your further and extended consideration for the service he has rendered this institution. Mr. Taylor has been with us 26 years, during 17 of which he has acted in the capacity of secretary, and nine years previous to that time he was assistant to Mr. Cloud. I know you will all agree with me when I say that Mr. Taylor has been, perhaps, second to none of the men we have ever known in like capacities, and I take this opportunity of expressing to him, on behalf of the Association, full assurance of our appreciation of his splendid efforts and of our continual symathy and support in the life-work which he has undertaken and so faithfully discharged for a period now exceeding a quarter of a century."

WAGE CONFERENCE PRACTICALLY BROKEN OFF

The conference on wage demands of the train employes was practically broken off at the end of yesterday's session when leaders, A. B. Garretson, president of the Order of Railway Conductors, and W. G. Lee, president of the Brotherhood of Railroad Trainmen, announced that they would not accept the railroads' contingent proposal providing for readjustment of the provisions in the present schedules and the elimination of certain arbitrary payments, even if the railroads would accept the Brotherhoods' proposals. They said they would not consider any modification of their demands and that there was no use of going any further.

Elisha Lee, chairman of the Railroad Conference Committee, said: "We cannot break till we are definitely prepared to say to each other that we are done. We will adjourn till to-morrow and we will then definitely tell you whether or not we want to modify our proposition and how we stand on the whole business."

The break came after the railroads had finished giving replies to a long list of questions asked by the Brotherhoods as to the effect of the contingent proposal on specific cases. Mr. Garretson said: "We now ask you for a declaration in terms whether you will accept our proposal as modified or unmodified by yours."

Elisha Lee asked if the Brotherhoods were prepared to make that offer and if they had authority to accept.

Mr. Garretson replied: "If you made that proposition we could accept, but wouldn't. No man this side of the table would accept our proposition as modified by yours. It is reasonably apparent that there is no possible convergence in our lines of procedure and it is an utter waste to spend time in conference. When we put these things back to the membership we can speak authoritatively."

Mr. Lee said: "We want to go over this very carefully before we say finally we are done."

The negotiations have been in progress two weeks and consisted of discussions of the technical details of the demands and the railroads' reply. There was absolutely no argument nor discussion of the merits of the controversy.

ADDITIONAL MASTER CAR BUILDERS' REGISTRATION

Albers, L. H., Air Brakes; N. Y. C.; Traymore.
Alquist, Peter, S. C. D.; M. K. & T.; Traymore.
Ayers, A. R., Eng. Roll. Stock; N. Y. C.; Blenheim.
Barclay, F. B., S. M. P.; Ill. Cent.; Shelburne.
Barnum, M. K., S. M. P.; B. & O.; Dennis.
Barrett, C. D, A. M. P.; Penna.; Brighton.
Barrett, R. W., M. C. B.; N. & S. Ry.; Arlington.
Bartlett, Henry, G. M. S.; B. & M.; Blenheim.
Beattie, J. A., Supt.; McK. Conn. R. R.; Seaside.
Benjamin, C. H., Purdue Univ.; Pierpont.
Bentley, W. F., D. M. C. B.; B. & O.; Shelburne.
Billau, L. S., Asst. Elec. Eng.; B. & O.; Chalfonte.
Blair, H. A., D. M. C. B.; B. & O.; Risley.
Borell, Elmer A., E. of M. P.; P. & R. Ry.; Albemarle.
Bottomly, B. S., Ch. J. Insp.; P. & R.; Lexington.
Breyer, J. S., M. M.; Southern; Traymore.
Brown, M. G., M. M.; W. & T.; Penn Hall.
Burch, J. J., D. C. I.; N. & W.
Calkins, S. E., A. S. R. S.; N. Y. C.; Traymore.
Campbell, F. D., G. C. F.; Tac. East.; Schlitz.
Capany, Alfred, M. C. B.; G. Trunk; Alamac.
Carmer, J. R., G. F.; P., B. & W.; Traymore.
Carson, G. E., D. M. C. B.; N. Y. C.; Dennis.
Cartwright, D. J., Elec. Eng.; L. V.; Pennhurst.
Case, S T., M. C. B.; N. Y. C.; Pennhurst.
Chambers, C. E., S. M. P.; Cent. N. J.; Dennis.
Chandler, R. L., D. M. C. B.; New York City; Marlborough.
Charlton, Geo. J., G. C. F.; D. L. & W.; Pennhurst.
Clark, F. H., G. S. M. P.; B. & O.; Blenheim.
Colgate, Thos., M. M ; Litch. & Madison Co.
Corinth, A. B., G. I.; A. C. L.; Haddon Hall.
Courson, J. F., G. F.; P. R. R.; Seaside.
Coutant, M. R., M. M.; Ulster & Dela.; Shelburne.
Craig, Andrew, G. F.; B. & M.; Alamac.
Craig, James, C. D.; B. & M.; Traymore.
Crawford, C. H., A. E. M. D.; N. C. & St. L.; Blenheim.
Cromwell, O. C., Mech. Engr.; B. & O.; Chalfonte
Crone, S. A., Dennis.
Crownover, G. M., S. M. P.; C. G. W. Ry.; Dennis.
Darlow, A. M., S. M. P.; B. & S. R. R.; Chalfonte.
Davis, M. J., A. E. M. P.; Penna.; Chalfonte.
Davis, W. H., Mech. Engr.; N. Y. O. & W.; Chalfonte.
Dice, Agnew T., Jr., Gen. Insp. M. P. & R. E.; P. & R. Ry.
Dickinson, F. W., M. C. B.; B. & L. E.; Chalfonte.
Dieman, C. W., M. M.; Gr. Bay & West.
Donehue, Thos., Div. Gen. Fore.; N. Y. C.; Haddon Hall.
Duffey, G. J., M. M.; L. E. W. Ry.; Chalfonte.
Dunkle, S. K., S. M. P.; Benwood & W. Con. Ry.; Netherlands.
Eberle, Wm F., G. F.; Penna.; Chalfonte.
Eddy, F. H., Shop Supt.; B. & M.; Alamac.
Elmer, Wm., S. M. P.; Penna. R. R.; Traymore.
Ettenger, R. L., C. M. E.; So. Ry.; Dennis.
Ewald, Wm., S. M. P.; Cumb. & Penna.; Ebbitt House.
Ewing, J. J., Mech. Engr.; C. & O.; Alamac.
Ferguson, G. M., Supt.; Lake Terminal; Seaside.
Fitzmorris, Jas., M. M.; Chicago Junct. Ry.; Lexington.
Fowler, G. L., Dennis.
Fox, Frank L., G. F. C. D.; P. M.; Pennhurst.
Fox, Geo. P., Shop Supt.; N. Y. C.; Pennhurst.
Fretts, J. C., M. C. B.; D. L. & W.; Traymore.
Frye, A. D., S. M. P.; Piedmont & Nor. Lines; Dennis.
Fryer, C. V., G. T. C. D.; N. Y. O. & N.; Chalfonte.
Gibbs, A. W., C. M. E.; Penna.; Chelsea.
Gilman, G. H., M. C. B.; N. Pac.; Chalfonte.
Goodrich, Max., M. M.; N. Y. C.; New Holland.
Gould, J. R., G. S. M. P.; C. & O.; Shelburne.
Graff, F. M., S. A. M. D.; Erie; Traymore.
Grewe, H. F., M. M.; Wab. Pitts. Term.; Sterling.
Grieves, E. W., Gal. Sig. Oil Co.; Blenheim.
Grove, P. L., M. M.; Penna.; Chalfonte.
Hagen, Chas., G. F. C.; W. & L. E.; Pennhurst.
Hall, W. H., C. C. I.; C. of N. J.; Arlington.
Hammeth, P. M., S. M. P.; Maine Cent.; Shelburne.
Hampton, J, N., F. C. D.; A. C. L.; Chalfonte.
Hankins, F. W., M. M.; Cumb. Valley; Chalfonte.
Hardin, E. N., G. P. I., Ill. Cent.
Harris, H. Y., M. M.; Tampa Nor.; Westminister.
Henry, W. C. A., S. M. P.; Penna. Lines; Chelsea.
Herrold, A. E., M. C. B.; Monongahela Conn.; Chalfonte.
Horrigan, John, S. M. P.; E., J. & E.; St. Charles.
Jett, E. E., M. C. B.: Morris & Co.; Alamac.
Jones, L. B., G. F.; M. D. & S.; Fredonia.
Kantmann, A. G., M. M.; N. O. & N. E.; Chalfonte.
Kearney, A., A. S. M. P.; N. & W.; Blenheim.
Keiser, C. B., M. M.; Penna.; Chalfonte.
Kendig, R. B., C. M. E.; N. Y. C.; Blenheim.
Kent, F. S., G. C. I.; Penna.; Blenheim.
Kiesel, W. F., Jr., Asst. M. E.; Penna.; Chelsea.
Kilroy, P. M., M. C. B.; St. L. S. West.; Traymore.
Kinter, D. H., G. F. C. D.; Monongahela R. R.; Watkins.
Kipp, A., G. C. I.; N. Y. O. & W.; Chalfonte.
Lynn, Samuel, M. C. B.; P. & L. E.; Pennhurst.
MacBeth, H. A., S. M. P.; N. Y. C. & St. L.; Traymore.
McConville, H. A., Insp. E. C. R.; L. & N.
McCully, B. N., F. C. D.; N. Y. P. & N.; Chalfonte.
McFeatters, F. R.; Supt.; Union R. R.; St. Charles.
McIlvaine, C. L., M. M.; N. Y. P. & N.; Brighton.
McKinsey, C. R., G. C. I.; P., B. & Wash.; Runnymede.
McMunn, W. R., G. C. I.; N. Y. C.; Shelburne.
Maddox, C. W., C. C. I.; C. & O.; Chalfonte.
Maginn, J. J., M. M.; Cin., Nor.; Arlington.
Manning, J. H., S. M. P.; D. & H.; Blenheim.
May, H. C., S. M. P.; L. V.; Chalfonte.
Maxfield, H. H., S. M. P.; Penna; Brighton.
Meister, C. L., M. E.; At. C. L.; Chalfonte.
Meloy, H. C., C. E.; N. Y. C.; Dennis.
Miles, C. J., Genl. Mgr.; Doud Stock Car; Chalfonte.
Miller, E. F., G. F. M. D.; Tex. Mid.; Alamac.
Milliken, Jas., S. M. P.; P., B. & W.; Brighton.
Millin, Thos., Retired M. M.
Monfee, A. J., M. M.; Birm. So. Ry.; Schlitz.
Montgomery, Hugh, S. M. P.; Rutland; Dennis.
Mulfeld, J. E., Cons. Eng.; Blenheim.
Murrian, W. D., S. M. P.; So. Ry.; Shelburne.
New, W. E., M. M.; K. C. Term. Ry.; Traymore.
Nuttall, W. H., S. M. P. & R. S.; Man. & N. E.; Alamac.
Nystrom, K. F., C. D.; Gd. Trk.; Traymore.
O'Brien, J. E., M. S.; Mo. Pac.; Traymore.
O'Brien, W. J., G. F.; Kan. & Mich. Ry.; Haddon Hall.
O'Dea, P. J., G. I.; Erie; Pennhurst.
O'Donnell, T. J., Arbitrator; N. Y. C.; Pennhurst.
Orchard, J. H., F. C. Dept.; D. & H.; Bothwell.
Osmer, J. E., S. M. P. & M. C. B.; Ann Arbor; Dennis.
Patmor, H. F., G. C. F.; Ch. Gt. W.; Sterling.
Perine, D. M., S. M. P.; Penna. R. R.; Traymore.
Pilcher, John A., M. E.; N. & N. Ry.; Absecon.
Rasbridge, R. B., S. C. D.; P. & R. Ry.; Dennis.
Richards, C. F., C. C. I.; L. & H. River; McGinley.
Rink, George W.; M. E.; Cent. R. R. N. J.; Dennis.
Rusch, Frank, G. M. M.; I. & W. N.; Schlitz.
Russum, T. H., S. Pass. Car.; B. & O.; Dennis.
Sasser, J. W., S. M. P.; Norfolk So.; Alamac.
Schmidt, Prof. E. C., Univ. of Ill.; Haddon Hall.
Schmoll, G. A., S. M. P.; B. & O.; Blenheim.
Schrader, J. R., G. F.; N. Y. C.; Dennis.
Schrayer, C. A., C. & N. W.; Alamac.
Seiders, J. A., S. M. P. & R. E.; P. & R. Ry.; Dennis.
Sitterly, W. H., G. C. I.; Penna.; Blenheim.
Slayton, C. B., Ass't Supt.; St. J. & Gd. Isle; Arlington.
Slayton, F. T., S. M. P.; Virginian; Arlington.
Sloan, J. R., E. E. C. L.; Penna. R. R.; Haddon Hall.
Smith, Henry J., G. C. I.; D., L. & W.; Monticello.
Smith, Jno. L., M. M.; Pitts., Shaw & Nor.; Runnymede.
Smith, M. R., M. M.; Chgo., Ind. & Louis; Haddon Hall.
Stark, F. H., S. R. S.; Manhout R. R.; Chalfonte.
Stoll, W. J., Chief Inter. Inspc.; Pennhurst.
Sullivan, J. J., S. M.; N. C. St. L.; Traymore.
Sumner, Eliot, M. M.; P. R. R.; Brighton.
Swelley, E. A., M. C. B.; S. A. L.; Traymore.
Symons, W. E., L. E., Fr. & Clar.; Chalfonte.
Tatum, Jno. J., S. F. C. D.; B. & O.; Chelsea.
Terrell, C. H., S. M. P.; C. & O.; Haddon Hall.
Tewkesbury, E. M., G. S.; So. Buffalo Ry.; Blenheim.
Thomas, H. T., M. M.; Det. & Mackinac; Haddon Hall.
Thomas, I. B., S. M. P.; Penna.; Brighton.
Thorn, W. H., M. C. B.; C., St. P., M. & O.; Chalfonte.
Tierney, H. J., M. E.; M., K. & T.; Traymore.
Trapnell, F. W., C. I. I.; K. C. R.; Chalfonte.
Treleaven, Thos. A., M. C. B.; G. Trunk; Traymore.
Van Buren, C. W., G. M. C. B.; Can. Pac.; Traymore.
Vittum, J. E., C. J. I.; Col. Ry.; Colwin.
Wallis, J. T., G. S. M. P.; Penna. R. R.; Traymore.
Walsh, F. O., S. M. P. & E.; Georgia R. R.; Blenheim.
Wanamaker, W., Elec. Eng.; C., R. I. & P.; Haddon Hall.
Warnock, H. R., S. M. P.; West. Md.; Traymore.

Way, E. S., G. F. M. C. B. Clearing House; Penna.; Runnymede.
Williams, J. W., C. T.; P. S. & Nor.; Dixie Hotel.
Wilson, Jas. W., Insp.; N. Y. C. & P. & R.; Monticello.
Wright, O. C., A. E. M. P.; Pa. Lines West; Blenheim.
Yergy, J. P., G. C. I.; Penna. Dennis.
Young, C. D., E. of T.; Penna.; Brighton.
Zweibel, C. A., Supt. C. R.; A. C. L.; Chalfonte.

ADDITIONAL MASTER MECHANICS' REGISTRATION

Seiders, I. A., S. M. P.; P. & R. Ry.; Dennis.
Slayton, C. E., A. S.; St. J. & G. I.; Arlington.
Slayton, F. T., S. M. P.; Virginian; Arlington.
Smith, J. L., M. M.; P. S. & N.; Runnymede.
Smith, M. R., M. M.; C. I. & L.; Haddon Hall.
Squire, W. C., Cons. Eng.; Dennis.
Sumner, Eliot, M. M.; P. R. R.; Brighton.
Sullivan, J. J., S. M.; N. C. & St. L.; Traymore.
Symons, N. E.; Chalfonte.
Terrell, C. H., S. M. P.; C. & O.; Haddon Hall.
Thomas, H. T., M. M.; Det. & Mackinac; Haddon Hall.
Thomas, I. B., S. M. P.; Penna.; Brighton.
Tierney, H. J., M. E.; M. K. & T.; Traymore.
Wallis, J. T., Genl. S. M. P.; Penna. R. R.; Traymore.
Walsh, F. O., S. M. P.; G. R. R.; Blenheim.
Warnock, H. R., S. M. P.; West. Maryland; Traymore.
Whyte, F. M.; Hutchins Car Roof. Co.; Blenheim.
Wieseckel, G. F., M. M.; West. Md.; Dennis.
Wright, O. C., A. E. M. P.; Pa. Lines West; Blenheim.
Young, C. D., E. T.; Penna.; Brighton.

ADDITIONAL SPECIAL GUESTS

Acker, C. L., M. M.; Toledo Term.; Traymore.
Armstrong, T. G., M. C. B.; Can. Pac.; Runnymede.
Atkinson, C. R., M. P. Dept.; P. R. R.; Russell.
Baldwin, T. C., M. M.; N. Y. C. & St. L.; Pennhurst.
Bankard, E. H., P. A.; B. & O.; Chalfonte.
Barnum, E. M.; B. & O.; Dennis.
Barry, Frank J., M. M.; N. Y., O. & W.; Chalfonte.
Beasley, S. F., M. C. B.; Cudahy Ref. Co.; Traymore.
Beaumont, H. A., G. F. C. S.; B. & O.; Alamac.
Beck, H. J., G. L. I.; P. & R.; Speidel.
Beggs, John H., Pur. Agt.; C. & E. I.; Blenheim.
Black, W. G., M. M.; N. Y. C. & St. F.; Chester Inn.
Booth, Henry, R. F.; D. & H.; Lexington.
Boring, T. J., M. P. I.; Penna.; Craig Hall.
Brown, H. S., For. Off. Mch. Engr.; Penna.; Dennis.
Busch, C. L., Shop Supt.; So. Ry.; Dennis.
Burel, W. C., Gen. Fore.; Ore. Short Line.
Burke, C. W., G. F.; B. & O.; Lexington.
Burns, R. C., Chf. A. B. & S. H. Insp.; Penna.; Haddon Hall.
Burr, C. E., Genl. Supt.; D. & H.; Blenheim.
Branch, C. S., S. Mech. Dept.; C. P. & St. L.; Dennis.
Campbell, E. R., G. C. F.; Minn. Transfer.
Carey, W. S., Ch. Cl.; Penna. Lines West.
Case, T. G.; Ass't G. F. Elec. Div.; N. Y. C.; Pennhurst.
Chambers, A., Retired Eng.; P. R. R.
Chambers, James; C. of N. J.; Dennis.
Cooke, O. F., M. C. B.; Virginian; Arlington.
Cotton, W. A., Ch. Cl. to Gen'l Mch. Supt.; Erie; Shelburne.
Craig, B. C., Insp. of S. A.; B. & O.
Crossman, T. E., Official Reporter; Dennis.
Davis, James P., Frt. Agt.; McKees. Connect. R. R.; Seaside.
Deem, Charles, Car. Fore.; B. & O.; Norwood.
Dildine, J. A., Ch. Cl. M. P. Dept.; Penna. Lines West; Dennis.
Dobson, F. L., G. F.; P. R. R.; Blenheim.
Dobson, W. E.; Cambria & Ind. R. R.; Shelburne.
Doke, G. E., Eng. Tests; N. Y. C.; Shelburne.
Duff, W. R., M. C. B.; Int. Gt. Nor.; Dunlop.
Ellsworth, G. M., Chf. Cl.; Penna.; Chalfonte.
Emmart, J. A., Asst. Genl. Mgr.; Carol. At. & West.; Chelsea.
Ewald, Frank, S. M. P.; Cumb. & Penna.; Ebbitt.
Ewing, J. J., M. Eng.; C. & O.; Alamac.
Flanagan, M., M. M.; C. & O.; Blenheim.
Fosnot, G. N.; Chf. Cl. M. M.; Cumb. Valley; Chalfonte.
Freeman, L. D., S. S.; S. A. L.; Kenderton.
Gethens, J. T., Asst. M. M.; B. & O.; Belmont.
Gibbs, W. B., Pur. Agt.; Live Pltry. Trans. Co.; Blenheim.
Gleason, F., Eng. of M. P.; D. & H.
Goldbaugh, H. A., G. C. F.; B. & O.; Arlington.
Gould, Jos. E., M. M.; C. H. & N.; Dennis.
Hamm, Warren C., Draftsman; D. & H.; Willard.
Hampton, K., Ch. Jt. Insp.; B. & O. & P. & R.; Shackamaxon.
Hatch, F. T., Ch. Eng.; Vandalia, Traymore.
Hauser, Percy, Fore. Office of M. E.; Penna. R. R.
Hayes, C. J., Cl.; N. Y. C.; Pennhurst.
Hill, Alexander T., Genl. Frt. Agt.; Lake Ter.; Seaside.
Hughberger, Mr., Fore. Car Rep.; P. R. R.; Atlantic.
Ingersoll, G. R.; Pur. Agt.; N. Y. C.; Blenheim.
Jackson, R. E., M. M.; Virginian; Arlington.
Jellison, B. T., P. A.; C. & O.; Blenheim.
Jones, W. H., Supervisor; Pullman; Haddon Hall.
Kantmann, Walter; N. O. & N. E.; Chalfonte.
Keene, J. C., T. I. T. & C.; Wabash; Alamac.
Keppelman, H. S., Gl. C. I.; P. & R.; Chalfonte.
Kiesel, W. F., 3d; Penna.; Chelsea.
King, A. O., Insp. Test Dept.; Penna. R. R.; Craig Hall.
King, John H., Chf. Cl. M. of W.; N. Y., O. & W.; Phillips.
Langton, G. H., Supt. of Shops; S. A. L.; Alamac.
Lee, F. H., C. P. W. Insp.; Pullman Co.
Little, David A., Jr., M. Painter; P. R. R.; Breakers.
Little, Winthrop S., M. Painter; P. R. R.; Breakers.
Loree, L. F., Pres.; D. & H.; Blenheim.
McCarra, M. F., M. M.; Ill. So.; Haddon Hall.
McClennan, W. J., G. P. W. I. Car Dept.; N. Y. C.; Alamac.
McGrath, C. H., C. C. to Dir. Purchases; So. Pac.; Chelsea.
McGregor, R. B., Sp. Agt.; Penna.; Seaside.
McLahorn, R. W., Dispatcher; Piedmont & No. Lines; Dennis.
Mallory, C. E., S. of T. M.; Kingan Refrig. Line; Traymore.
Martin, W. H., Foreman; P. R. R.; Lansdale.
Mattingley, E. H., Car Fore.; B. & O.; Risley.
Mawhinney, M. F., M. M.; K. & W. Va.; Haddon Hall.
May, H. C., Jr., S. M. P.; L. V.; Chalfonte.
Miles, C. J., Gen. Mgr.; Doud Stock Car Co.; Chalfonte.
Moncure, A. H., G. F. Mch. Dpt.; Rch. Fksb. & Ptc.; Dennis.
Moran, W. F., M. M.; B. & O.; Belmont.
Morton, R. C., Dftsn.; B. & O.; Cheltham Reviere.
Mounce, R. S., G. F. Car Rep.; Erie; Pennhurst.
New, Fred; K. C. T.; Traymore.
Nicholson, S. M., Store Keeper; P. R. R.; Grand Atlantic.
Peddle, C. R., P. A.; Vandalia; Blenheim.
Peddle, J. B., Pur. Agt.; Vandalia; Blenheim.
Peters, W. C., Ass't to Mech. Engr.; B. & A.; Alamac.
Pfeiffer, C. A., M. P. Insp.; Penna.; Runnymede.
Phelps, W. G., Pur. Agt.; Penna. Lines; Traymore.
Pilcher, John A., Jr. N. & W. Ry.; Absecon.
Pilcher, Robert M.; N. & W.; Absecon.
Pilcher, William; N. & W.; Absecon.
Pletcher, G. C., Chf. Cl.; P. R. R.; Schlitz.
Powell, M. T., Storekeeper; M. & K.; Strand.
Priebe, H. W., Car Dept.; C. R. I. & P.; Lexington.
Prince, Jas., Car. Fore.; B. & O.; Norwood.
Quinn, John, Car. Fore.; B. & O.; Majestic.
Reichmann, F. J.; Streets Lines; Chalfonte.
Reilly, Thos. E., Sp. Agt.; P. R. R.; Alamac.
Remick, J. H., Chf. Cl.; Nor. Pacific; Chalfonte.
Reynolds, Wm., Director; Quincy West. Ry.; Dennis.
Rowden, T. W., Ass't Supt.; St. J. & G. I.
Ryan, J. M., T. I.; C., St. P., M. & O.; Chalfonte.
Schnitzer, Jos.; C. C. C. & St. L.; Traymore.
Schofield, W. B., Ass't to Pres.; D. & H.; Blenheim.
Schuyler, A. J., G. C. I.; Virginia; Arlington.
Severn, A. B., Dftsn.; B. & O.; Cheltenham Revere.
Sheen, John, M. C. B.; A. & W. P.; Lexington.
Shilling, J. K., Spec. Accountant; B. & O.; Haddon Hall.
Simons, A. M., Rd. For. Eng.; S. & No.
Sindall, G. E. M., Ass't G. F.; P. R. R.; Westminster.
Smith, E. W., Ass't M. M.; Penna.; Shelburne.
Smith, J. H., Foreman; P. R. R.; Lansdale.
Smith, P., Fireman; D. & H.
Snyder, D. W., Cl. M. C. B.; B. & O.; Reisley.
Sprowl, N. E., S. M. P.; A. C. L.; Chalfonte.
Squire, W. C., Const. Eng.; Dennis.
Stanton, E., C. I.; N. & P. B. Line; Westminster.
Stohlberger, Philip, R. F. E.; At. City Railroad.
Subjeck, J. A., G. L. Fo.; B. & O.; Belmont.
Telford, A., Pur. Agt.; C. N. O. & T. P.; Traymore.
Telford, E. A.; Traymore.
Thill, E. J., Supt. Car. Dept.; N. Y. C.; Blenheim.
Tindahl, E. W., Fore. Car Rep.; B. & A.; Schlitz.
Tonge, John; Chalfonte.
Train, A. H., Sp. Insp. Pres. Off.; N. Y. C.; Shelburne.
Utley, Col. E. H., V. P. & G. M.; B. & L. E.; Traymore.
Van Brunt, G. E., M. M.; P. R. R.; Schlitz.
Vought, Harry D., Sec. N. Y. Ry. Clerk; Blenheim.
Walsh, F. O., Jr.; Ga. R. R.; Blenheim.
Watkins, Jesse M., V. P.; Mather Stock Car Co.; Traymore.
Weaver, C. H., Supt. of A. Br.; N. Y. C.; Traymore.
Weigle, John, Foreman; Penna.; Elwood.
Wiese, A. J., Gen. Fore.; B. & O.; Risley.
Wieseckel, G. F., M. M.; West. Maryland; Dennis.
Williamson, C. H., Dftsn.; Penna.; Dennis.
Valentine, J. H., Sec.; N. Y. C.; Pennhurst.
Yergy, H. J., Chf. Cl.; P. R. R.; Runnymede.

Conventionalities

A. L. Whipple, who has been acting as a special representative of the Railway Improvement Company of New York, has been appointed sales manager for that company.

George A. Cooper says that the next time he wields the paint brush it won't be out on the pier. It seems that he was continually annoyed by demands that he show his union card. The trouble is that not every one is able to distinguish between an artist and a painter.

It seems only a few years since Edwin F. Leigh appeared here at his first convention as the cub of the C. R. E. Co. contingent. He now visits us as the general manager of the Marion Malleable Iron Works, Marion, Indiana. Edwin "can be some feller" to travel at this speed.

J. A. Cameron, Canadian manager for the Robinson Connector Company, is attending the convention. Mr. Cameron is the son of J. R. Cameron, assistant general manager, Canadian Northern, and was in various departments of railroad service before entering the supply trade.

For the first time Owen W. Middleton, publicity manager of the American Steel Foundries, is attending the conventions as a full-fledged supply man. He is at the Chalfonte. Mr. Middleton was formerly editor of the Railway Master Mechanic.

Caesar had his Brutus, Charles First his Cromwell and Billy Heacock of the American Flexible Bolt Co., used to have his red whiskers, but is here without them this year. He is, however, bland as ever and with the same ease of manner and flexibility, temperamentally speaking, of course.

George Van Sweringen, of the Chicago Railway Equipment Company, is now a "country squire." George has built an attractive new home in Kenilworth, Illinois, and at present has a mind like a composite of an agricultural college faculty. He can, without more than a half hour's hesitation and without biting them, tell the difference between pea seeds and liver pills.

M. K. Barnum, superintendent of motive power of the Baltimore & Ohio, is accompanied this year by his oldest son, Edmund. This is the latter's first visit at the conventions. He graduated in 1915 from the mechanical engineering department of the University of Illinois, and has always heretofore been at school at the time of the conventions. Mr. Barnum's youngest son is still in the University of Illinois.

Jack Rodger, of the Safety Car Heating & Lighting Company, is a young man who radiates extraordinary cheerfulness and energy for such little consumption of food. Jack is on a microscopic diet and no doubt holds the world's record for being more genial and doing more work, on a leaf of spinach or three-quarters of a string bean than most of us on a porterhouse steak and garnishings.

LeGrand Parish, president of the American Arch Company, came down from New York on Tuesday, most of the way by automobile, accompanied by Mrs. Parish. Six miles of the trip was accomplished by Mr. Parish on foot, three being made towards New York and three in the return direction. The cause of the pedestrianism was the loss of a hub cap, which was finally found only a short distance back of the car.

Uncle George Wagstaff, of the American Arch Company, will be missed by all in attendance at the conventions this year. Soon after returning from the Boiler Makers' convention at Cleveland he began having trouble with one of his feet and the trouble has since developed into a running sore. He is confined to his home in Hoboken and it is not expected that he will be able to get to Atlantic City at all during the conventions.

The W. E. Sharps, of Chicago, arrived on the special Tuesday and are guests at the Marlborough-Blenheim. The party is a happy family, consisting of Mr. and Mrs. Sharp, their son, J. H. Sharp, and daughters, the Misses Pauline and Agnes. After the conventions they will visit New York, Boston and other Eastern points. Miss Agnes Sharp graduated at the University of Chicago last week. Miss Pauline Sharp is a graduate of Belmont College, Nashville, Tenn.

W. J. Tollerton, general mechanical superintendent of the Rock Island Lines, who arrived yesterday, has been having a year of extraordinarily hard work—as, indeed, have all the officers of this system. Within recent months Mr. Tollerton has travelled 18,000 miles, in which he has covered practically the entire mileage of the Rock Island twice. The road's equipment and shops are now in more satisfactory condition than in a long time, and it is making the best showing of operating results and earnings in proportion in some years.

Col. Harlow D. Savage, W. L. Allison and James Anthony, of the American Arch Company, and Ralph Coburn, of the Franklin Supply Company, motored down from New York in a new Cole Eight, which was delivered to Col. Savage just before they left New York. In fact, it was not delivered. It was due to be delivered, and as its prospective owner had invited a party to come down with him in it, he simply went and got it and drove it off.

The party stopped at Lakewood over night.

W. E. Dunham, supervisor of motive power and machinery of the Chicago & North Western, who is attending the conventions, recently has had conferred on him the honor of election to the presidency of the Western Railway Club. He succeeds in that office H. H. Harvey, general car foreman of the Burlington, who also is among the convention visitors. Under Mr. Harvey's able leadership the Western Railway Club had one of the best years of its history, and it undoubtedly will have another such year under the presidency of Mr. Dunham.

R. S. Mounce, general foreman of the car department of the Erie at Jersey City, arrived in Atlantic City on Tuesday afternoon and will be present during the M. C. B. Convention. Mr. Mounce has had an extended practical experience in railway mechanical work and spent some time in the office of William Schlafge, general mechanical superintendent, on special technical work. About a year ago he was appointed general foreman at Jersey City, a terminal at which the difficulties are considerable, and has been very successful in handling it.

Clement F. Street, vice-president of the Locomotive Stoker Company, is accompanied this year by Mrs. Street. Mr. and Mrs. Street motored down from New York on Monday. Mr. Street was recently presented with the John Scott medal by the city of Philadelphia for his work in developing the locomotive stoker. This medal is accompanied by a diploma which Mr. Street has had framed and placed in the exhibit booth of the company. The works of the Locomotive Stoker Company were recently moved from Schenectady to Pittsburgh, but with the difficulties of moving, the new plant is not yet quite ready for operation.

"Dick" Naylor, of the Symington Company, George A. Post, Jr., of the Standard Coupler Company, and "Jack" Rodger, of the Safety Car Heating & Lighting Company, all belong to the Westmoreland Country Club, at Chicago, all

play golf together a great deal, and all came to the conventions together, sharing a drawing room between them. Mr. Naylor recently has invented a golf game which is played with cards; and on the way down they tried the game out to determine where the members of the party should sleep. "And," says "Jack" Rodger, who told about the new game, "it's a real golf game, because I played true to form and drew the sofa."

Did you see Charlie Storrs yesterday? We emphasize the period because we fear something may have happened to him between then and the time this *Daily* went to press. As we understand it, the pinkish adornment on Charlie's upper lip is (or was) a small section of a plantation from the east side of the Andes. As he tells it, Charlie tried to graft some of the odd growth to his chin; but he awoke one morning to find that something akin to a moth had evidently eaten away part of the shrubbery and left several barren patches. He then experimented with the upper lip with better success. Possibly it was the powder that gave the growth its peculiar hue; but Charlie stoutly maintains that it is quite natural.

R. C. Vilas, president of the Pyle-National Company, arrived Tuesday evening. Mrs. Vilas did not come with him this year. Mr. Vilas has been very busy recently in making plans for a new plant which the company is arranging to build in Chicago. William Miller, vice-president of the Pyle-National Company, and Mrs. Miller and J. Will Johnson, general manager, also are here, and all are staying at the Marlborough-Blenheim. This is the first time for several years that Mr. Johnson has not had a lot to do in connection with the work of the Railway Supply Manufacturers' Association. Having served as chairman of various committees, as vice-president, and last year as president, he is now a member of the highly respectable society of veterans who have been honorably retired.

William Schlafge, general mechanical superintendent of the Erie, is congratulating himself on the results which he is obtaining from the use of a weight-reducing diet. He says that when a man gets to the point of being "logey" and wants to go to sleep after lunch, it is time to commence reducing his waist line, as there is no room for sleep in the railway business. Mr. Schlafge says that the first of the two additional Triplex type locomotives which are being built for the Erie by the Baldwin Locomotive Works, has just been received and the other is expected very soon. This will makes three locomotives of this type in service on the Erie, the first one now having been in successful operation for two years.

As has been customary for several years, H. W. Belnap, chief inspector of safety appliances of the Interstate Commerce Commission, and several of the safety appliance inspectors are attending the conventions and inspecting the exhibits. The inspectors here this year are: T. W. Gibbons, Syracuse, N. Y.; George B. Winter, Portland, Oregon; Job Strickland, Milwaukee; Henry Kirch, Los Angeles, Cal.; Thomas Hicks, Provo, Utah; A. R. Layman, Little Rock, Ark; A. F. Duffy, Scranton, Penna., and Joseph Bromley, Binghamton, N. Y. With the approach of the date—July 1, 1917,—when it will be necessary for all railway cars to be fully equipped with the appliances prescribed by the Interstate Commerce Commission, the subject of safety appliances and the work of the inspectors takes on increasing importance.

President E. W. Pratt, of the Master Mechanics' Association and Mrs. Pratt, are accompanied this year by their daughter, Mrs. Verona Pratt Barton, and their granddaughter, Miss Catherine Van Tassel Barton, aged two years. Mrs. Barton, before her marriage, was a regular attendant at the conventions, and was one of the most widely-known and popular young ladies coming to them. Her many friends will be glad to see her here again. The party came on the special train from Chicago, and Miss Catherine was one of the principal attractions on it. Her fond grandfather having told her to shake hands with one of his friends, she went right on—being by heredity a good mixer—and shook hands with everybody on the train, including the porters. It need hardly be added that after that she had an abundance of friends on the train.

Among those who were here last year and whom the hand of death has since claimed, are: O. C. Gayley and E. M. Grove. Both had attended these conventions for many years. Mr. Gayley took part in the activities of the supplymen's association some 20 years ago, when he was connected with the Safety Car Heating & Lighting Company; but we do not recall that he ever held office. After he had been made vice-president of the Pressed Steel Car Company his time was so fully occupied that he was unable to attend for more than a few days and his natural reserve kept him in the background. Mr. Grove, too, was of a retired disposition; and while keenly interested in the work of the Railway Supply Manufacturers' Association, it was not until his election to the presidency in 1909 that he took any active part. For the next two years he served as a member of the executive committee.

John P. Neff, vice-president of the American Arch Company, runs a six-cylinder Oakland with which he has been making gasolene records. A few weeks ago he ran the car 75 miles over rough and hilly roads on three gallons of gasolene, and on another occasion under similar conditions made 96 miles on four gallons. He is still a railroad man and likes to stick to railroad methods of calculation and he says that in the latter trip he averaged 36 ton-miles per gallon of gasolene. Mr. and Mrs. Neff, with Mr. Neff's brother-in-law, Edwin H. Ford, and Mr. Ford's son, John, motored down from New York on Tuesday. Mr. Ford is president of the Ford Meter Company and lives at Wabash, Ind. He is returning from the Water Works Convention held last week in New York. Young Mr. Ford is a sophomore at Purdue University. It had been hoped that on the level roads to Atlantic City another gasolene record would be made, but J. P. says that besides being sandy it is also "up hill both ways."

Somebody having mentioned French Lick, Ind., in a conversation in the lobby of the Marlborough-Blenheim the other evening, B. E. D. Stafford submitted a claim for the distinction of being the only person who ever arrived at that place in a boat. French Lick is on the Monon road, and ordinarily the only stream which flows near it is one which trickles through the golf course. A few years ago, Mr. Stafford started there on a Monon train. It had been raining, and while he was en route there came a terrific downpour. When the train arrived at West Baden, the track to French Lick was under several feet of water. Mr. Stafford saw some boys in a rowboat, and offered them $2 to transport him and his trunk the rest of the journey. They had just got a good start when the boat came to a sudden stop. Investigation disclosed that it had stuck on top of a picket fence. By skillful maneuvering it was released from the fence, and soon pulled up in front of the French Lick hotel, which is owned by Tom Taggart, now United States Senator from Indiana. Mr. Taggart, who was sitting on the porch, hastened down at once, grasped Mr. Stafford by the hand as he stepped on land, and greeted him enthusiastically as the first man who had ever arrived at his hotel by boat.

New Devices

ROCKER DRAFT GEAR

A new type of draft gear has been placed on the market by the Railway Supply & Equipment Company, Atlanta, Ga. This gear is of the spring type and is so constructed that a pressure of 5¼ lb. on the drawbar will give a pressure of one pound on the draft springs when the gear is in its neutral position. This reduction in force is accomplished

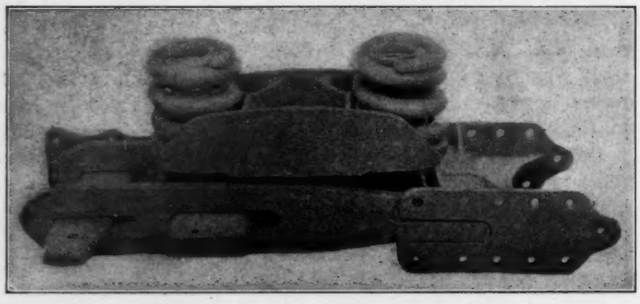


Fig. 1.—Rocker Draft Gear Removed from its Housing

by means of two rockers operating on the toggle joint principle. The gear was designed by H. C. Priebe for the purpose of providing a draft gear for high capacity cars. It may be equipped with two, three, or more M. C. B. Class *G* springs, according to the capacity desired.

The construction is shown in the illustrations. Fig. 1 shows a three-spring gear, the middle spring being removed,

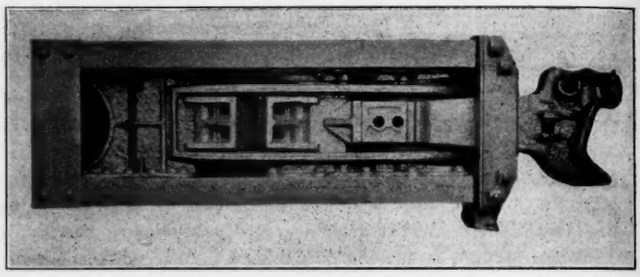


Fig. 4.—Bottom View of the Rocker Draft Gear

drawbar is in tension, it then being at the forward end of the slot in the car sills. The end of the yoke *E* rides in a slot in the casting *G* and serves as a buttress for the rocker *B* when the drawbar is in compression and as the driving element when the drawbar is in tension, it being pulled forward by the key *H* which has a snug fit in the slot of the coupler shank and pulls the yoke forward with the drawbar. The bottom view of the draft gear (Fig. 4) will assist in giving a clearer idea of this action.

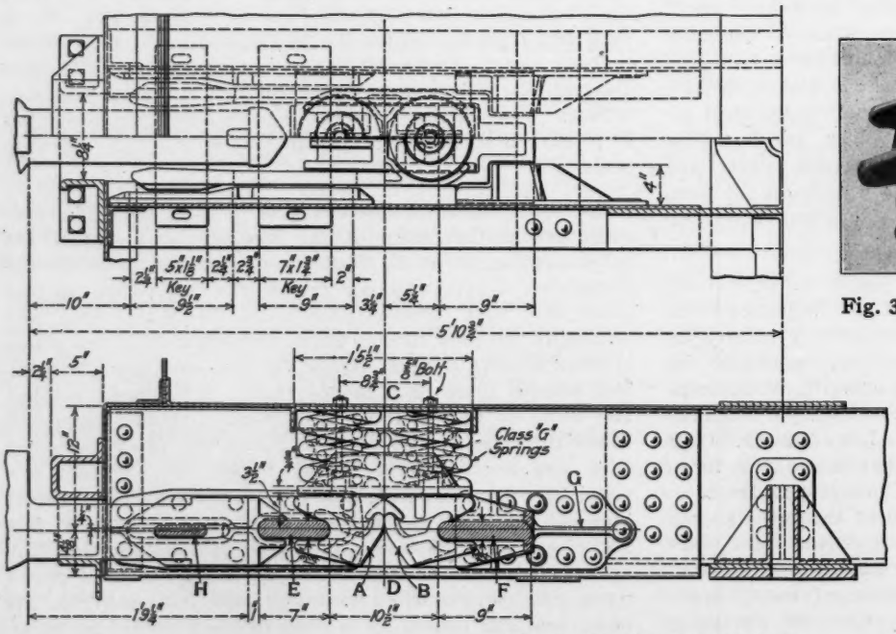


Fig. 2.—Rocker Draft Gear

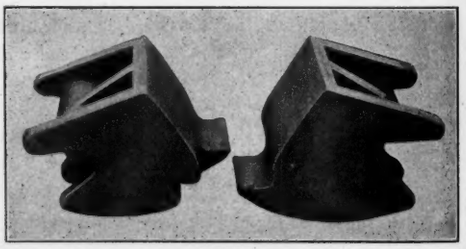


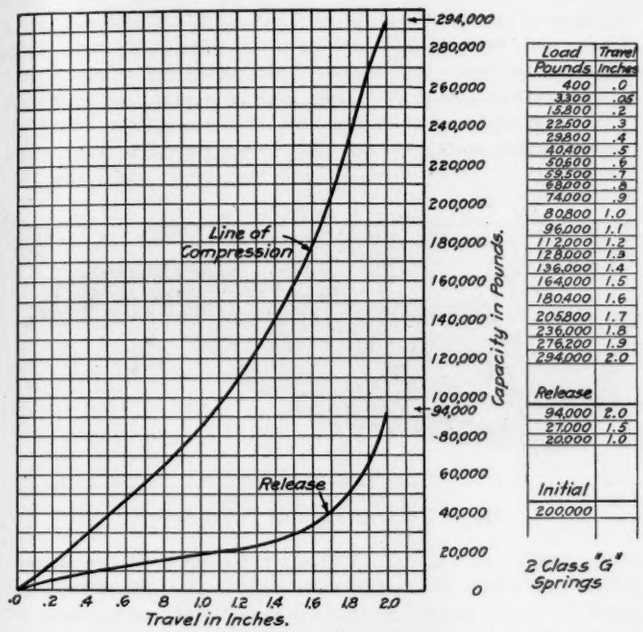
Fig. 3.—Rockers for the Rocker Draft Gear

detached from its housing. Fig. 2 shows a drawing of the two spring draft gear. In this illustration the rockers are shown at *A* and *B*. They are better illustrated in Fig. 3, which shows them upside down with reference to their position in Fig. 2. These rockers are interlocked for guiding purposes and float in the gear mechanism, being held in contact with the key *E* and the end of the yoke at *F* by the pressure of the springs, the spring plate riding on the upper faces of the rockers.

The key *E* serves as a distance piece between the end of the coupler horn and the rocker *A* when the drawbar is in compression and as a buttress for the rocker *A* when the

Now as the drawbar is either pushed or pulled it will readily be seen that the rockers *A* and *B* must roll on each other and be moved bodily upward. In doing so their upper surfaces, which bear on the spring plate, will force the spring

plate upward thus compressing the springs. The contour of these surfaces is such that there will be a rolling action on the spring plate. The shape of this curve governs the travel of the springs. The point of contact of rockers *A* and *B* being one inch above the center line of draft, and the parts *E* and *F* being 10½ in. apart give a reduction in force of 5¼ to 1. As *E* approaches *F* this ratio will be somewhat reduced. It is not necessary to adhere to the proportions mentioned above; any ratio can be obtained by increasing the distance between *E* and *F* or by increasing the number of the springs. The contour of the rockers at their point of contact will determine the length of gear travel. Fig. 5 shows a graph of a test made with the two-spring draft gear at the testing laboratory of the Armour Institute. Tests with the three-spring draft gear showed a capacity of 400,000 lb. with a 2-in. travel.

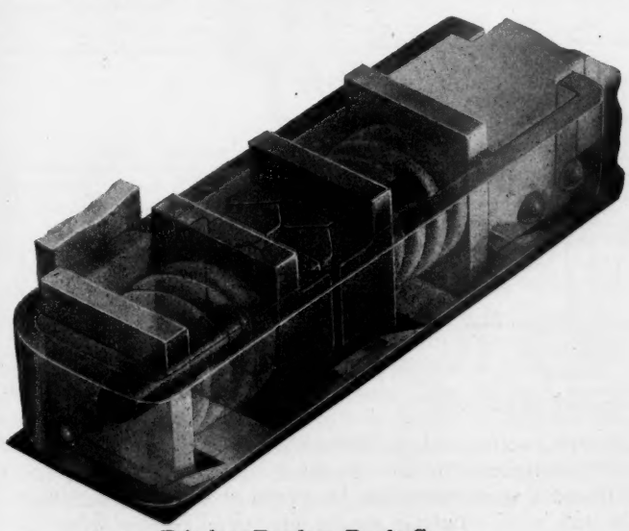


Load Pounds	Travel Inches
400	.0
3,300	.05
15,800	.2
22,500	.3
29,800	.4
40,400	.5
50,600	.6
59,500	.7
68,000	.8
74,000	.9
80,800	1.0
96,000	1.1
112,000	1.2
128,000	1.3
136,000	1.4
164,000	1.5
180,400	1.6
205,800	1.7
236,000	1.8
276,200	1.9
294,000	2.0
Release	
94,000	2.0
27,000	1.5
20,000	1.0
Initial	
200,000	

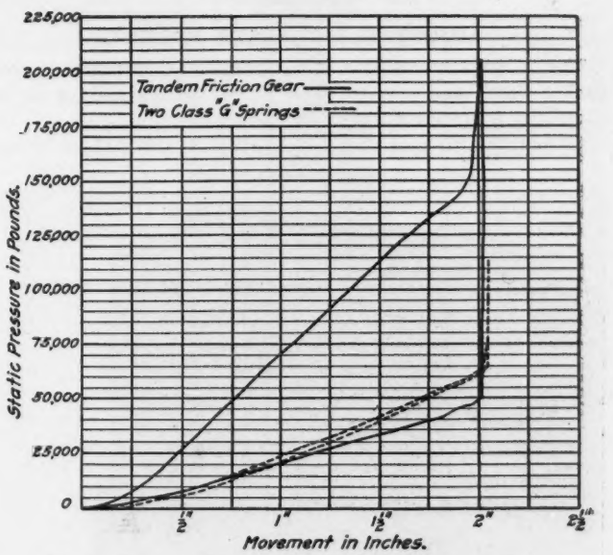
Fig. 5.—Test of the Two-Spring Type of Rocker Draft Gear

FRICTION TANDEM DRAFT GEAR

A new type of tandem draft gear has been placed on the market by the Universal Draft Gear Attachment Company, Chicago, in which the vertical thimbles and rivets for holding these members, which are used in the customary form of tandem draft gears, have been eliminated. In their place moveable follower plates with friction wedges, such as are shown in the illustration, have been introduced. By this means it has been possible materially to increase the capacity of a tandem draft rigging with Class *G* springs.

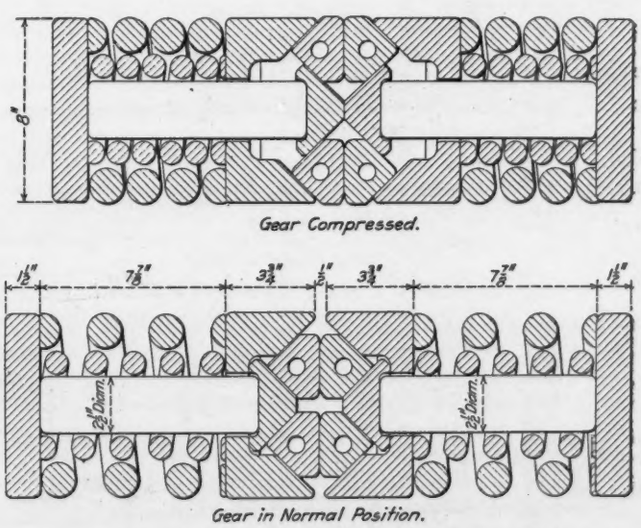


Friction Tandem Draft Gear



Static Tests of the Friction Tandem Draft Gear

Reference to the phantom picture and the drawings of the gear gives a clear idea of its construction. It consists of four follower plates, the two intermediate plates floating on the springs and the wedges. As force is applied to the gear, either pulling or pushing, the end follower plate forces the plunger with its wedge-shaped head into the floating wedges, causing them to move upward, forcing back the intermediate follower plate on to the spring. In this way a combination friction and spring gear is obtained which gives the desired capacity with a small amount of recoil action. A comparison of the action of this gear with a tandem gear equipped with two Class *G* springs is shown in the chart. It will be seen that with a movement of slightly over 2 in. over 200,000 lb. capacity is obtained with the friction tandem draft gear, whereas with the tandem draft gear, composed solely of the two Class *G* springs,



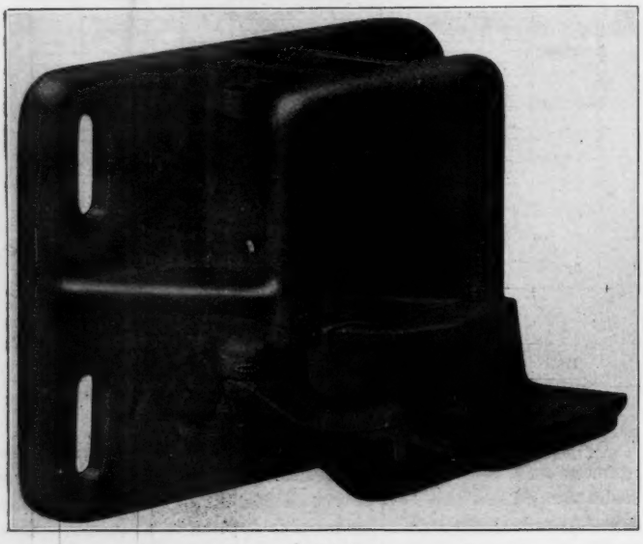
Friction Tandem Draft Gear—Normal and Compressed Positions

a capacity of approximately 65,000 lb. is obtained. In addition to the advantages obtained from this gear in the matter of increased capacity and reduced recoil, the elimination of the vertical thimbles removes a source of trouble due to loose and broken rivets, as with the friction tandem gear the yoke is not subjected to buffing shocks. The device is applicable to both old and new cars.

ADJUSTABLE COUPLER POCKET

The illustration shows the Simplex adjustable coupler pocket which has recently been placed on the market by the American Steel Foundries, Chicago.

In addition to the usual slotted holes, the height of this



Simplex Reversible Coupler Pocket

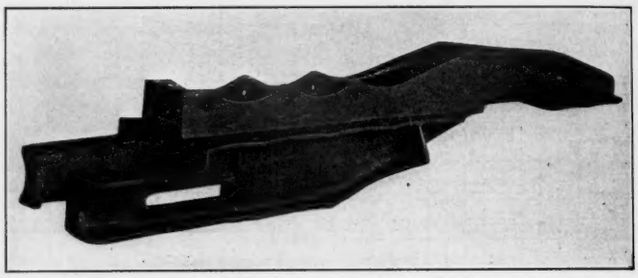
coupler pocket can be adjusted by reversing the entire pocket. The coupler head is supported and prevented from drooping by a detachable shelf which is changed to the opposite side when the pocket is reversed. This shelf has a pair of rearwardly extending lugs which engage in recesses in the pocket as shown in the illustration, the edge of the shelf fitting into a lip of the pocket. Thus it will be seen that the adjustable shelf interlocks with the pocket casting and provides a firm support for the coupler head. The detachment of the shelf is impossible as long as the assembled parts remain complete.

When the pocket is reversed, as is frequently necessary in engine and tender service in order to obtain the requisite coupler height, the shelf is simply transferred to the opposite side of the opening, where it attaches in the same manner as shown in the illustration. The device may be seen at the booth of the manufacturers.

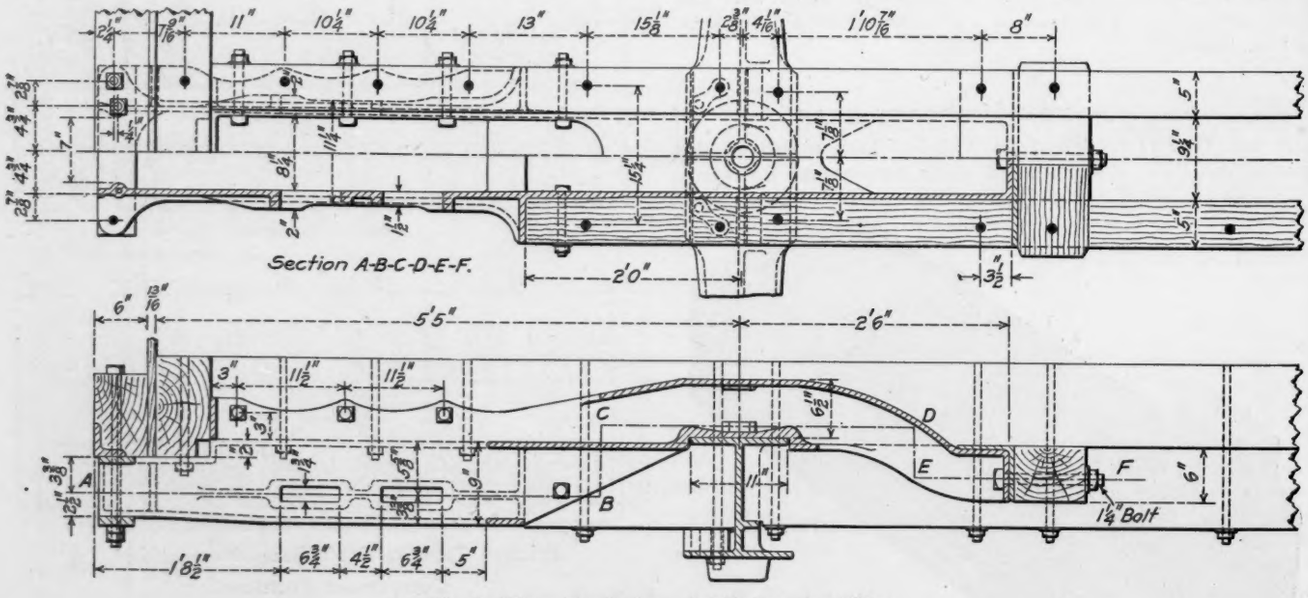
CAST STEEL DRAFT ARM

The single piece cast steel draft arm illustrated herewith is being exhibited by the Chicago Steel Car Company, Chicago. The draft arm is cast in one piece for each end of the car, thereby eliminating the necessity of using tie plates and bolts on the bottom of the arms and substantially tying together the center sills, end sills and body bolster.

The arm is designed in the form of a box girder which is inserted between the center sills, being raised to pass over the bolster; it drops down behind the bolster until the top at the inner end comes just below the bottom of the center sills. The effective area of the section over the bolster is about 17 sq. in. and a recess, in which the top of the bolster fits, securely interlocks the two parts. The inner end of the arm is locked behind the bolster by a steel angle securely fastened across the bottom of the center sills. The horizontal flange of this angle rests on top of the end of the draft arm, securely holding it in place; even though all the supporting bolts should be lost the car could safely be handled to its destination in this condition. Back of the angle lock is placed a wood filler block, the ends of which pass through the sub sills. Buffing shocks are thus carried over the bolster to the sub-sills behind.



Single Piece Cast Steel Draft Arm

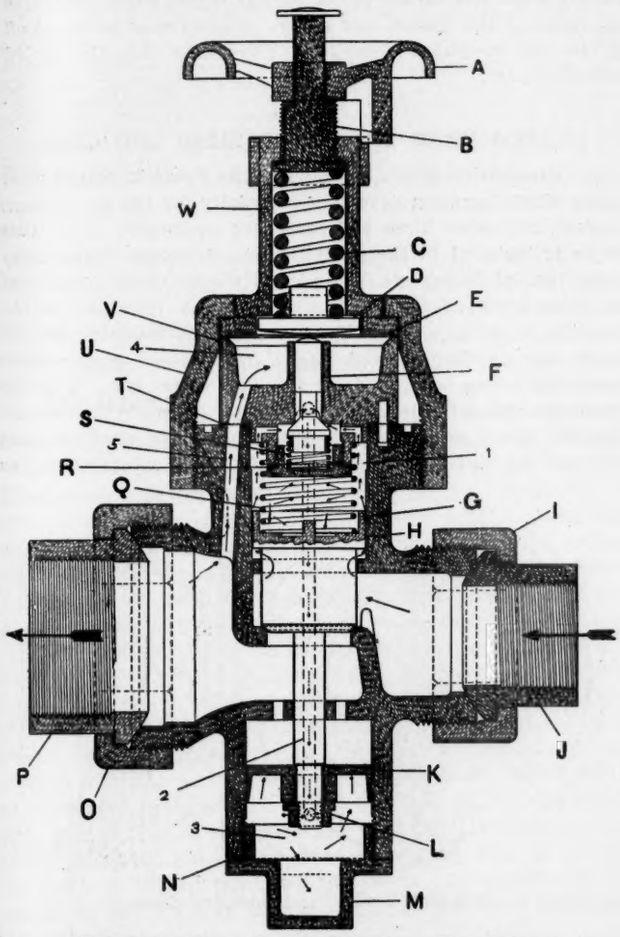


Single Piece Draft Arm Applied to the Sills

These castings are easily applied to cars requiring draft arm repairs. It is claimed that such cars can be equipped with the cast steel draft arms and made ready for service the same day. It is not necessary to remove the bolster and no floors need be torn up. After the removal of the old wood draft timber, the steel draft arm is slid up over the bolster and readily locked in place. These draft arms may be designed to accomodate any of the standard draft gears now in use.

STEAM PRESSURE REGULATOR

The steam pressure regulator shown herewith has recently been placed on the market by the Greenlaw Manufacturing Company, Boston, Mass., and is included in the company's exhibit at Atlantic City. The illustration clearly indicates the operating features of the device, which offers a free and unobstructed passage from high to low pressure. Normally the valve is maintained in the closed position by the piston spring *Q*. The auxiliary piston *F* is forced downward by the

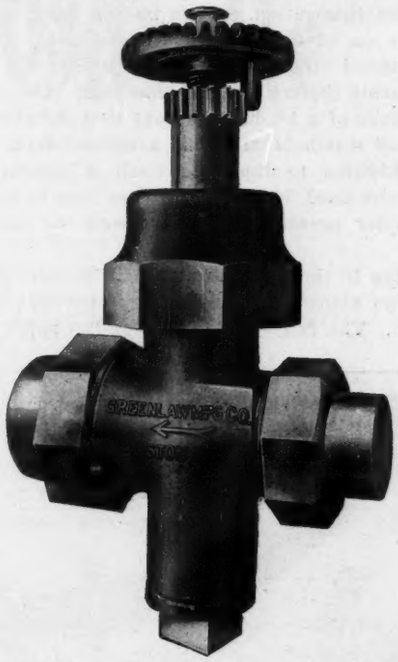


Cross Section of the Greenlaw Regulator

adjusting spring *C* acting through the diaphragm *E*. On the admission of steam, pressure accumulates in the chamber above the main piston *G* and passes through the center of the piston stem into the chamber below the dash pot piston *L*. The accumulation of pressure in this chamber opens the main valve. Conditions then remain unchanged until the train line pressure reaches the predetermined amount, when the pressure in the chamber below diaphragm *E* overbalances the spring load above the diaphragm. The upward movement of the diaphragm permits the spring *S* to close the valve on the lower end of the auxiliary piston, thus cutting off the passage to the under side of the dash pot piston and permitting the pressure above the main piston to close the main valve.

The handwheel is self-locking and is designed to remain securely locked until it is found necessary to raise it for a change of pressure, when the finger will disengage from the slots around the spring case. When the wheel is lowered it will again be locked.

As there is no direct port for steam to the auxiliary piston,



Greenlaw Steam Pressure Regulator

there is slight possibility of dirt getting to the valve and injuring the seat. When the regulator is once set to the pressure required it is said to maintain this pressure permanently without any build-up or drop, until adjusted for another pressure. The construction is such that there is claimed to be absolutely no trouble from chattering.

PASSENGER CAR BUFFER

Among the devices exhibited this year by the Waugh Draft Gear Company, Chicago, is a passenger car buffer operating on the same principle as the Type "A" buffer, which has been in use for several years. In the new Type "H" buffer, however, the arrangement of the coil springs and the steel plates has been reversed, the coil springs being placed in the front and the steel plates in the rear. The travel of the steel plates, which provides the high capacity, has been doubled by inserting two groups instead of one. The adoption of a casing in place of the former housing has resulted in reduction of weight and machine fitting, thereby enabling the manufacturers to produce the bufier at a lower price.

AN ENAMEL COACH FINISH

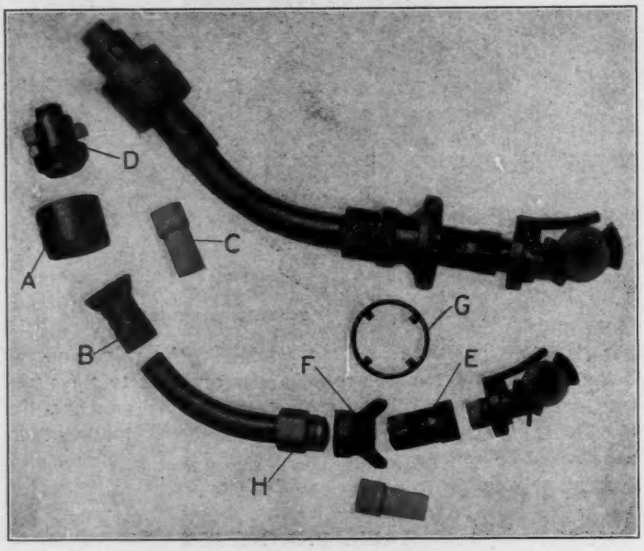
A new method of finishing railway coaches has been developed by Pratt & Lambert, Inc., Buffalo, N. Y., for which several unique features are claimed. It is known as the Vitralite railway enamel system and is a departure from the ordinary method in that it is based on an enamel surface instead of the undercoatings, flat color application and varnish finish which now are generally employed.

The complete finish consists of two coats of undercoating and two coats of railway enamel, which produce a surface comparable with the best heretofore obtainable by the varnish method. Tests covering a period of four years are said to indicate a considerably longer life for the Vitralite surface than can be obtained from the varnish surface. The reduction from the usual number of coats results in a marked saving of time and material. One or two coats are usually sufficient in refinishing. An exhibit of this system of coach finish may be seen at the booth of the manufacturers.

METAL AIR BRAKE HOSE

A metal air brake hose, the purpose in the development of which has been to replace the rubber hose now in general use by a permanent metal conduit of rugged construction, is shown in the illustration. After having been subjected to service tests on several railroads, it is being exhibited by the Dodge Metal Hose Company, Wellsville, N. Y., for the first time during the conventions this year. The body of the conduit is made of a 1¼-in. pipe bent to a suitable radius, to either end of which is attached a special form of flexible joint. In addition to the hose itself a special design of coupling is also used, which permits the hose to be uncoupled by hand under pressure without danger of injury to the operator.

By referring to the illustration it will be seen that the two flexible joints above referred to are somewhat different in construction. The body of the joint at the upper end of the



The Dodge Metal Hose

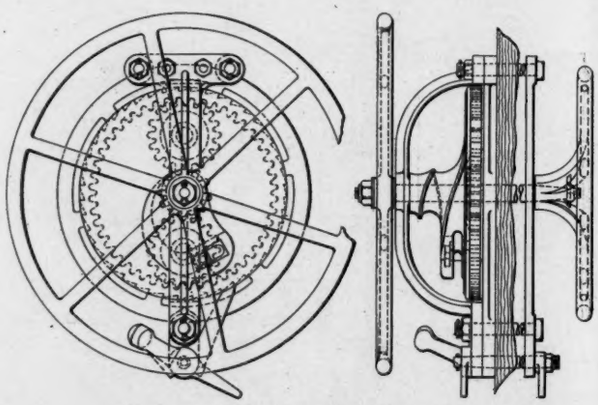
hose is shown at *A*. In the lower end of this piece is a ball seat on which bears the corresponding surface of the sleeve *B*. The heavy rubber gasket shown at *C* is inserted in the sleeve *B*, the end bearing upon a shoulder in the lower end of the sleeve. The joint is closed by the insertion of the packer *D* in the upper end of the casing, which compresses the rubber gasket and insures a tight joint under all conditions of service. This joint is not only flexible laterally in all directions, but permits the body of the hose to be turned about its own axis.

The lower joint consists of the two universals *E* and *F*, which are connected by the universal ring *G*. The gasket is placed in the universal *E*, which is then inserted in *F* and the joint closed by screwing the latter onto the universal bushing *H*. The gasket is thereby compressed a sufficient amount to insure an absolutely tight joint in any position which the parts may assume. This joint insures lateral flexibility in all directions, but permits no relative movement of the parts about the axis of the hose, thus maintaining the face of the coupling in a vertical position. The gaskets in these joints, being entirely encased, are protected against bursting stresses and are subjected to but a slight amount of wear, service tests indicating that their life is considerably greater than the life of the ordinary rubber air brake hose. When they are worn sufficiently to require renewal they may readily be replaced without the renewal of any other part of the hose, which otherwise is permanent.

The coupling shown is similar in general design to the standard M. C. B. hose coupling in general use. It differs from that coupling, however, in that it is made with a separate jaw which is pivoted to the body in such a way as to permit movement at right angles to the plane of the joint. The movement of this jaw is controlled by a cam surrounding the neck of the coupling, about the axis of which it turns. When the cam is in the open position, the distance between the inside of the coupling jaw and the face of the joint is sufficient to permit the direct insertion of the tongue of the opposite coupling without the necessity of the usual kinking of the hose in order to enter the edge of the tongue behind the jaw. With the parts in position the joint is then tightly closed by turning the cam to the closed position, in which it is locked by dropping the operating lever or latch behind a lug on the body of the coupling. In this position the essential dimensions of the coupling are M. C. B. standard and should the train part the operation of the couplings is the same as for the usual type. In disconnecting the couplings by hand however, while under pressure, the element of danger which now exists is removed. Instead of raising the couplings until the tongues are disengaged from the jaws, the cams are first turned to the open position, which separates the faces of the gasket and allows the pressure to bleed off before the couplings separate. They may then be pulled directly apart.

GEARED HAND BRAKE FOR BLIND END CARS

The illustration shows a design of the Peacock geared hand brake which has been developed especially for use on baggage, express, and other blind end passenger equipment cars. This brake is included in the exhibit of the National Brake Company, Inc., of Buffalo, N. Y., and in its basic design is similar to other types of the Peacock brake. By referring to the drawing it will be seen that the brake is mounted on the outer end of the car and has a hand wheel and ratchet-operating device both inside and outside of the car. It differs from the standard design of this type of brake in that an annular drum gear is used, with the brake shaft passing through the center of the drum shaft. This construction has



Peacock Brake for Blind End Cars

made possible a very compact arrangement with all gears covered, thereby precluding the possibility of accident through catching the hands or clothing in them.

The brake shaft is of 1⅛-in. cold rolled steel, on either end of which is mounted a hand wheel of proper size. On this shaft is mounted a pinion engaging two idlers the journals of which are secured to the frame and which in turn engage the teeth of the annular gear. On the outside of this gear, but covered by the winding drum, are the ratchet teeth which the pawl engages. The pawl may be operated from the inside as well as from the outside of the car. The design of the drum and the method of attaching the chain thereto is standard for all types of the Peacock brake and was fully described on page 259 of the *Mechanical Edition*, for May, 1915. A sheave wheel in a suitable housing is supplied with this brake and is mounted under the floor of the car, the chain running from the brake drum over the sheave to the brake rod.